ENGINEERING NEWS-RECORD

★

★

A McGRAW HILL PUBLICATION

Horton tank provides unfailing water pressure

for every need at Veteran's Hospital

The patients—and even some of the staff members—at the Veteran's Administration Hospital at Bedford, Massachusetts, probably never give a thought to the pressure in the water system—they just assume it will always be adequate.

But the Engineer Officer and Manager of the hospital didn't leave such a vital matter to chance. They developed, with Veteran's Administration Branch and Central Office cooperation, plans for a water system which included the 500,000-gal. Horton ellipsoidal bottom ***elevated*** tank shown at the right. Now, at any time—day or night—there is unfailing water pressure for all of the hospital activities.

The water works system at this hospital provides for general service and fire protection. The welded steel tank "floats" on the system and hence maintains water pressure for both purposes.

The Bedford hospital uses from 294,000 to 365,000 gallons of water per day. The minimum pressure in the water system on a normal day is 55 lbs. per sq. in.; the maximum is 70 lbs. There are 103 inside fire hydrants at the hospital and 25 outside fire hydrants.

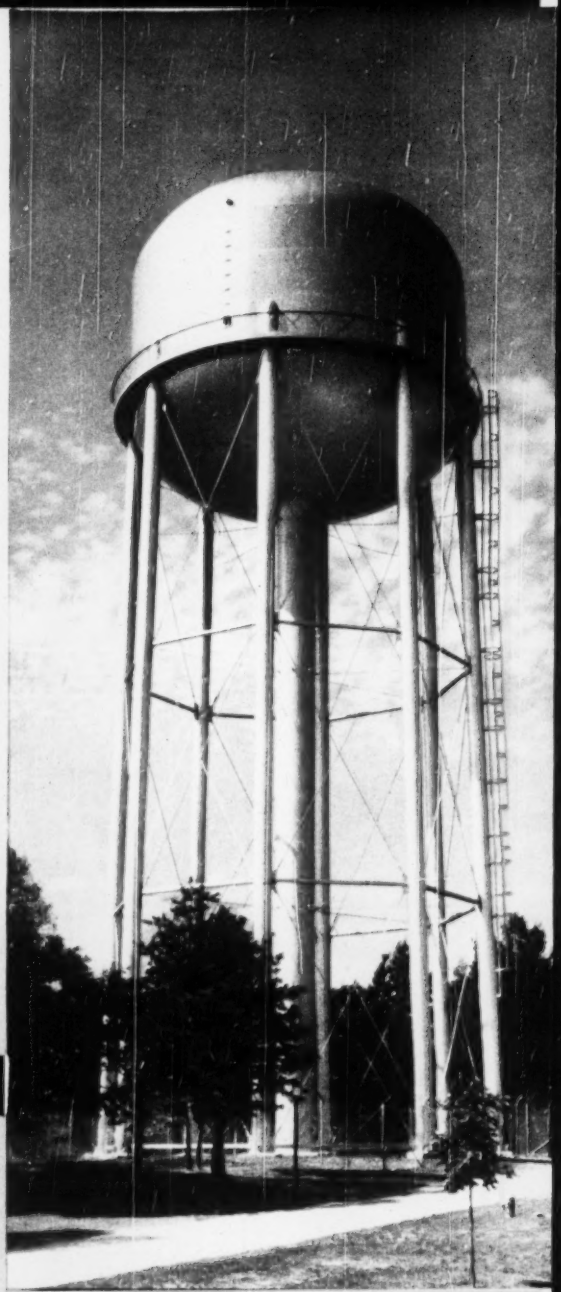
Gravity water pressure, as provided by a Horton elevated tank, is hard to beat for general service or fire protection. Since the water is held ***above*** your building, it flows—by the unfailing force of gravity—the ***instant*** it is needed.

Horton* welded steel tanks of the ellipsoidal-bottom design are available in standard capacities from 15,000 to 500,000 gallons. On your next job, provide ***unfailing*** water pressure by specifying a Horton elevated tank. Write the nearest office for information and estimates.

**Trademark registered in U. S. Patent Office*

• • • • •

The Veteran's Administration Hospital at Bedford, Mass., which was placed in operation in 1928, is devoted exclusively to the care and treatment of mental illness. Improvements to the water system, including the 500,000 gal. elevated tank were installed in 1949.



Advantages of WELDED tanks

- Butt-welded joints are watertight.
- All surfaces are smooth—no sharp edges or corners to invite corrosion.
- Regular painting is the only maintenance needed.
- Graceful streamline appearance harmonizes with modern architecture.

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4 LaPLANT-CHOATE MOTOR SCRAPERS MOVE 5000 YARDS A DAY *UP AND DOWN STEEP GRADES*

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Profit-Producing Features

- 225 H.P. Buda Diesel
- 45 H.P. Continental Starting Engine
- 12 Cu. Ft. Westinghouse Compressor
- 32 Amp. Autolite Generator
- Lipe Rollway Clutch — 17"
- Fuller Transmission — 4 A 112
- 4-Wheel Timken-Detroit Air Brakes
- Double-Acting Hydraulic Steering
- Big 24:00 x 29 Traction Type Tires
- Big Capacity — 14 yds. struck — 17.5 yds. heaped
- Big speeds — up to 21.2 mph
- Positive Forced Ejection plus High Apron Lift

On the level, LPC Motor Scrapers can't be beat! And up and down grades or in tough conditions, they're more unbeatable than ever for moving the *extra* yardage that gets the job done faster at lower cost per yard. Frank Hickey and other big time contractors lay the blue chips on Motor Scraper performance every time. For day-in, day-out dependability and production, LPC Motor Scrapers are first choice on more and more jobs each day. Get all the facts from your LPC distributor, La-Plant-Choate Manufacturing Co., Inc., Cedar Rapids, Iowa — West Coast Branch, 1022 77th Ave., Oakland, California

FAMOUS LaPLANT-CHOATE DOZERS — both angling and straight blade — are again available in either hydraulic or cable-operated types. See your LPC distributor NOW!

LaPLANT CHOATE

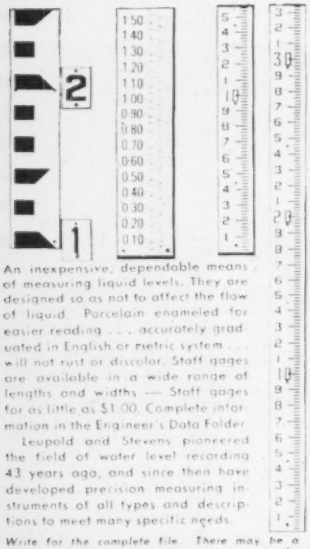
ENGINEER'S FILE ON HYDROGRAPHIC INSTRUMENTS

STEVENS
HYDROGRAPHIC INSTRUMENTS

A wide range of precision measuring instruments to record and indicate head, flow, and totalize flow; for waterworks, sewerage, irrigation and industrial uses. New, low cost methods of liquid level recording.

These methods and instruments for all liquid measuring problems are listed in a complete Engineer's Data folder for your convenience. This information folder is *FREE* and can be had by filling in the coupon below. The folder includes data on instruments to record fluctuations of liquids in oil production, stream gaging, deep wells, sewage, irrigation, etc., both accurately and economically.

STAFF GAGES



An inexpensive, dependable means of measuring liquid levels. They are designed so as not to affect the flow of liquid. Porcelain enameled for easier reading . . . accurately graduated in English or metric system . . . will not rust or discolor. Staff gages are available in a wide range of lengths and widths — Staff gages for as little as $1.00. Complete information in the Engineer's Data Folder.

Leupold and Stevens pioneered the field of water level recording 43 years ago, and since then have developed precision measuring instruments of all types and descriptions to meet many specific needs.

Write for the complete file. There may be a measuring device that exactly suits your specific requirements. Use the coupon below.

Please send me the *Engineer's Data Folder* with complete information on Hydrographic instruments.

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ENGINEERING NEWS-RECORD

Member ABC

Volume 145 JULY 27, 1950 No. 4

Walter G. Bowers
Editor

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Business News Chicago: Elsie Eaves; Washington: J. M. Hood; Dallas: Erle F. Kemp; Los Angeles: Ward Hawkins.

Contributing Editor Edward J. Cleary.

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B.F.Goodrich

Why you get more recappable tires when you use B. F. Goodrich

IN TOUGH, off-the-road operations like that shown above, mileage doesn't mean much in measuring tire service. Instead, the yardstick is number of hours a tire works and whether or not worn treads can be recapped, or if sharp, jagged rocks cause serious tread cuts.

Reports from B.F.Goodrich users indicate top performance of BFG tires as compared with other brands. For example, one operator reported over 4,500 service hours from B.F.Goodrich *Earthmasters* vs. only 1,600 hours from another make in identical service.

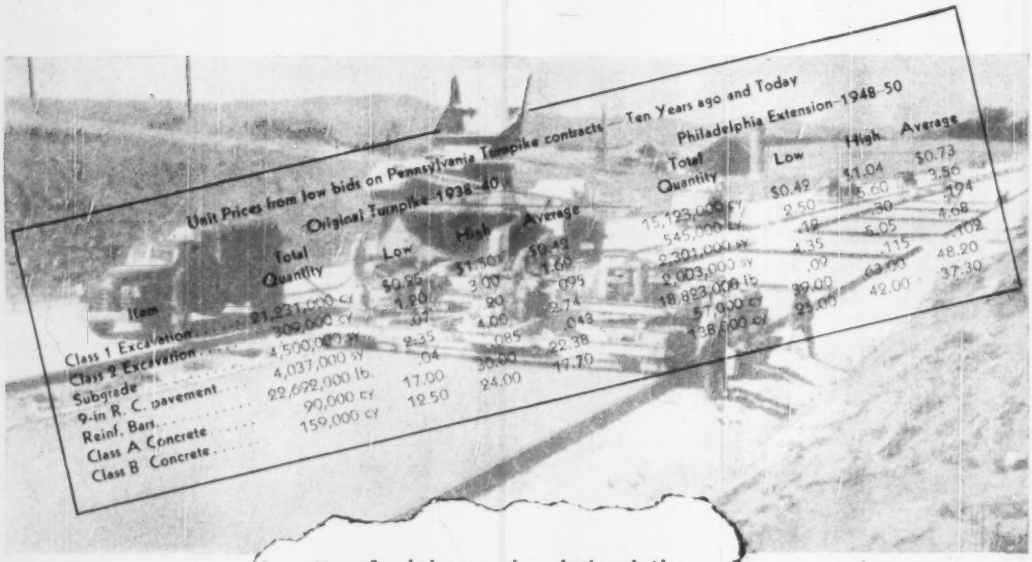
B.F.Goodrich tires stand out in service for many reasons. Tread rubber is specially compounded to resist cutting. More tires can be recapped because they have double bruise protection in the B.F.Goodrich *double nylon shock shield* ... 2 layers of nylon cord built in between the tread and the body plies.

Only BFG gives you the added protection of the nylon shock shield; the added savings of (1) longer tire life (2) increased bruise resistance (3) less danger of tread separation (4) more recappable tires. But nylon shock shield costs no extra — you pay no "premium".

Another "special" is the new ALL-NYLON tire for tough construction projects, quarry work, strip mining, etc. In all tests, not a single BFG All-Nylon tire blew out, nor one flex break occurred!

There's a specially designed off-the-road type B.F.Goodrich tire for every need. See your dealer or write, wire or phone — *The B.F.Goodrich Company, Akron, Ohio.*

RESEARCH KEEPS
B.F.Goodrich
FIRST IN RUBBER
Truck Tires



E. N. R. PHOTO

"...Aerial mapping helped the location. The map took five months to produce, about one-fifth the time needed for a ground-surveyed map; it cost about one-fifth, too."*

* *All data and charts from Engineering News-Record for June 15, 1950— "Penn Turnpike Stretches East."*

TODAY turnpike construction costs are up 37 percent over ten years ago, says *Engineering News-Record*. Every cost is up . . . except one! Turnpike aerial mapping costs about one-fifth as much as ground surveys—can be done in one-fifth the time.*

That's AERO SERVICE MAPPING. AERO SERVICE SPEED AND ECONOMY! And that's why AERO maps for large oil and mining interests in Alaska and Canada—in Venezuela and the Caribbean—in Portuguese East Africa and Tunisia—in the Union of South Africa and the Middle East.

And at home—AERO maps for large steel companies . . . timber interests . . . railroads . . . power companies . . . strip mines . . . city planners . . . highway departments of many states.

Mapping for industry is our business. Let our engineers help your staff advance exploration or development schedules by many months.

AERO SERVICE *mapping is the only construction cost that is down.* Write AERO SERVICE today.

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"We have found our MURPHY DIESELS dependable, efficient and economical."

Says: W. E. LAMBERT
Pres., Lambert Bros., Inc.

MORE output at less cost is what you get with dependable Murphy Diesel Power . . , and that's what makes bigger profits for you. Like so many crushed stone contractors, Lambert Bros., Inc., with headquarters at Knoxville, Tenn., found this to be the case. But read what Mr. W. E. Lambert, President, has to say about their Murphy Diesels—

"In connection with our twelve quarry operations in five southern states, we have a large number of Murphy Diesels of different sizes. Some of them have been in operation eight or ten years. We have found them dependable and efficient, and economical as to fuel consumption and up-keep."

Performance like this is what makes Murphy boosters out of Murphy owners everywhere. If you can use diesel power, be sure and find out what Murphy Diesel power can do for you. All the facts are presented in the booklet, *"10 Questions to Ask a Diesel Engine Salesman."* Write for your copy, today.

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Qualified dealers throughout the nation.

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Heavy duty power
for construction

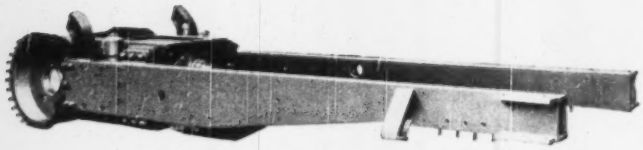
Murphy Diesel Engines and Power Units for construction, 90 to 220 H.P. Generator Sets, 60 to 133 K.W.

WHERE PROFITS
"CAT" EQUIPMENT SPEAKS YOUR

TO THE earthmoving contractor profits are mighty important. And an outfit like the one shown on opposite page offers more ways of *boosting* profits than any comparable equipment under the sun. These are not imaginary or "iffy" profits. They're the kind that show up unmistakably—in lower costs per yard, in more yardage per hour, and in more lifetime hours per machine.

Take the "Caterpillar" DW10—one of the greatest wheel tractor successes in recent years. Look at the work-capacity features and the honest-to-goodness quality "Caterpillar" has built into it. (Nothing is too trivial in making "Caterpillar" products the finest and most profitable investments of their kind.) See your "Caterpillar" dealer for further facts and figures about DW10 advantages for your job.

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

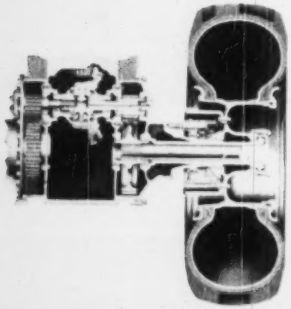


Profit IN STRENGTH

The DW10 is built to handle big loads. Main frame—composed of two strong box-welded members securely fastened to transmission case—is 12 inches deep at the rear, where the load is carried. The rigid structures have several times the resistance to twisting strains that channel sections of the same size afford. Great frame strength and ruggedness provide a firm foundation for the components of this powerful wheel tractor.

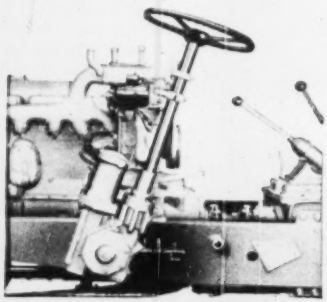
Profit IN QUALITY

To withstand the demands of continuous hard work, the final drive assembly of the DW10 is rugged yet finely engineered. It embodies precision-built bevel gears, full floating rear axle, crown-shaved "Hi-Electro" harcened final drive gears, optional gear ratios, welded steel transmission case, cast steel final drive housing, air-operated brakes. Sound construction!



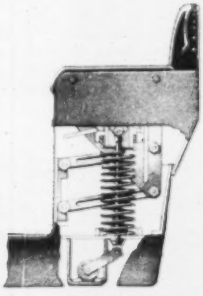
Profit IN EASE OF OPERATION

A hydraulic booster gives the DW10 passenger-car steering ease and absorbs shock loads when taking rutted roads and downhill runs. Yet the steering system can be operated independently of the booster feature. A fine safety feature in the highest sense!

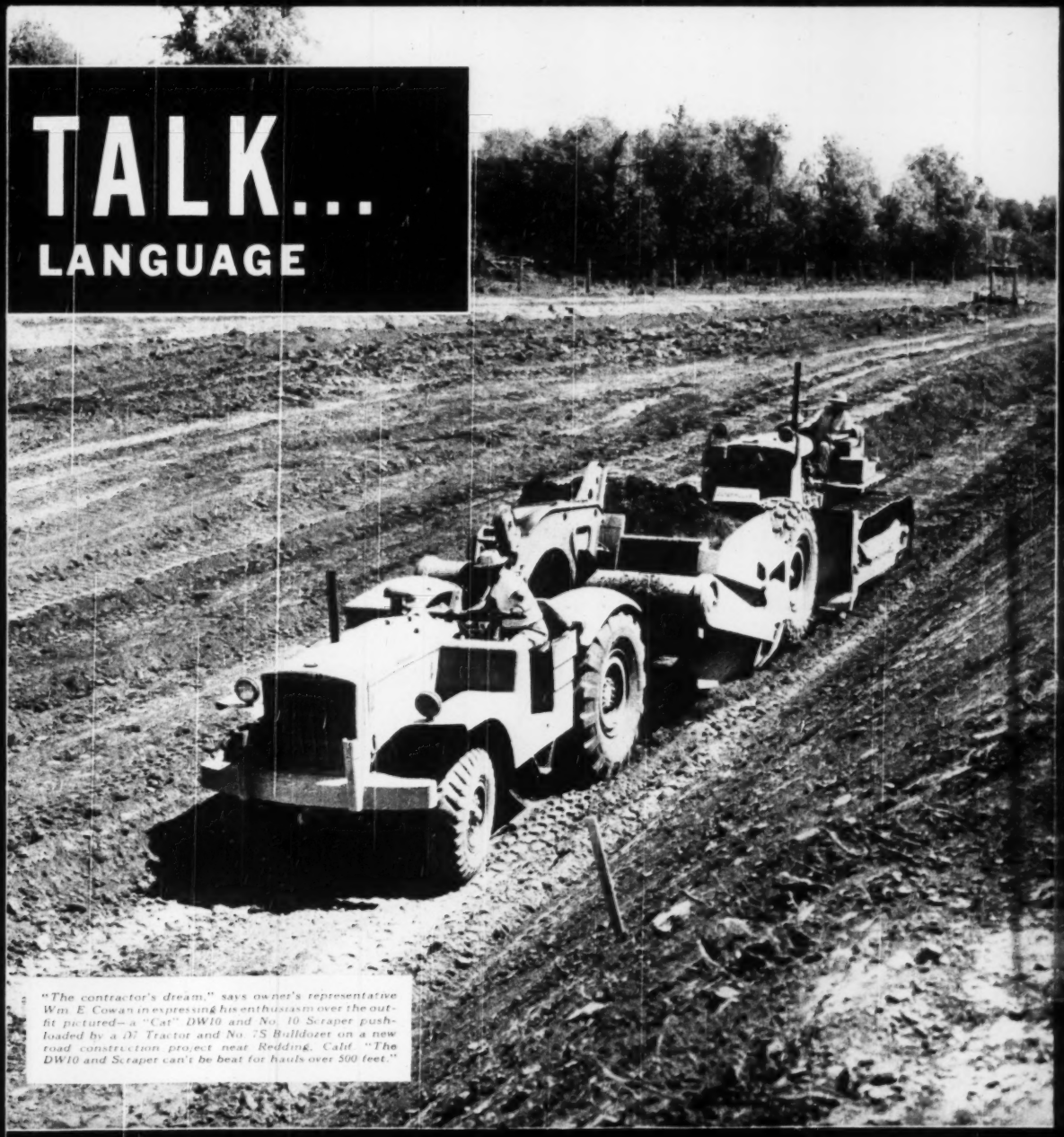


Profit IN OPERATOR COMFORT

The DW10 is built for easy, safe driving. Besides finger-tip steering, excellent visibility, handy controls, and minimum "stretch," the DW10 provides easy riding through airfoam rubber seat cushion *plus* seat springs that are adjustable to operator's weight.



TALK... LANGUAGE



"The contractor's dream," says owner's representative Wm. E. Cowan in expressing his enthusiasm over the outfit pictured—a "Cat" DW10 and No. 10 Scraper push-loaded by a D7 Tractor and No. 7S Bulldozer on a new road construction project near Redding, Calif. "The DW10 and Scraper can't be beat for hauls over 500 feet."

CATERPILLAR

DIESEL ENGINES · TRACTORS
MOTOR GRADERS · EARTHMOVING EQUIPMENT

SEE the NEW MOVIE FILM of "CAT" DW10s in ACTION

at your dealer's. A full-color picture packed with interest and convincing profit-making performance.

UNIFORMITY

Makes the Big Difference

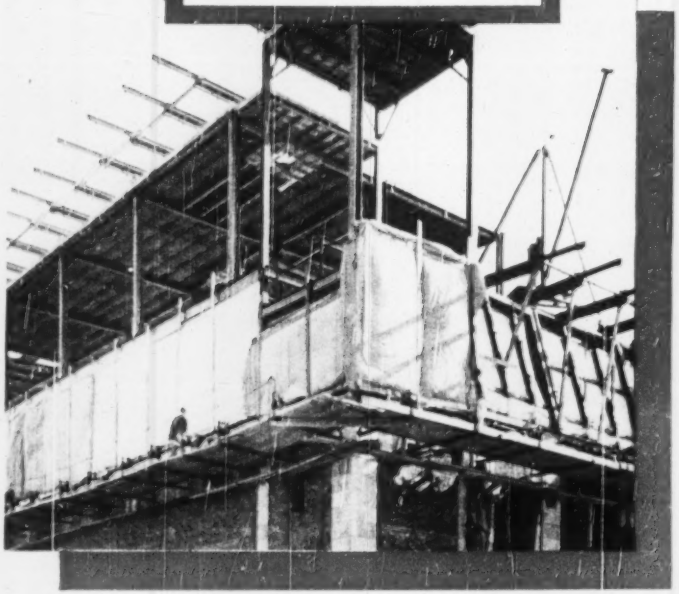
In TARPAULINS

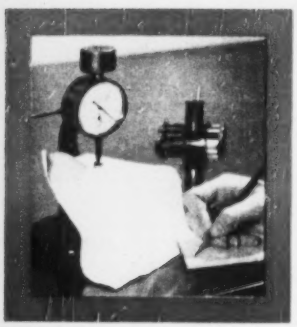
MT. VERNON — EXTRA

Gives You

Greater Fabric Uniformity

The greater uniformity of Mt. Vernon Extra Duck assures you the two most important qualities you want in tarps — top protection and top wear. You'll find your repair and replacement costs reduced considerably.





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NEWS BRIEFS

Time Marches Back—Completion of a viaduct across a rail line in St. Johns, N. B., may be delayed three or four months. Workmen were excavating for it when they struck a wharf and cribwork which had been buried about a century.

Let's Find Out—University of Illinois' Small Homes Council will undertake a one-year research project "to determine when and whether it's necessary to extend the foundation of a basementless home below the frost line. The project will be financed by a grant from Levitt & Sons, Inc., Long Island, N. Y., builders.

Convenient, Anyway—Plans are going ahead for Los Angeles' first heliport—atop the Pacific Mutual Insurance Co.'s 12-story office building just 6 minutes away from the airport as the 'copter flies. Landing areas would be built of 0.5-in. sheet steel on the two 70x170-ft wings. Loading and unloading would be concentrated at the central portion of the roof.

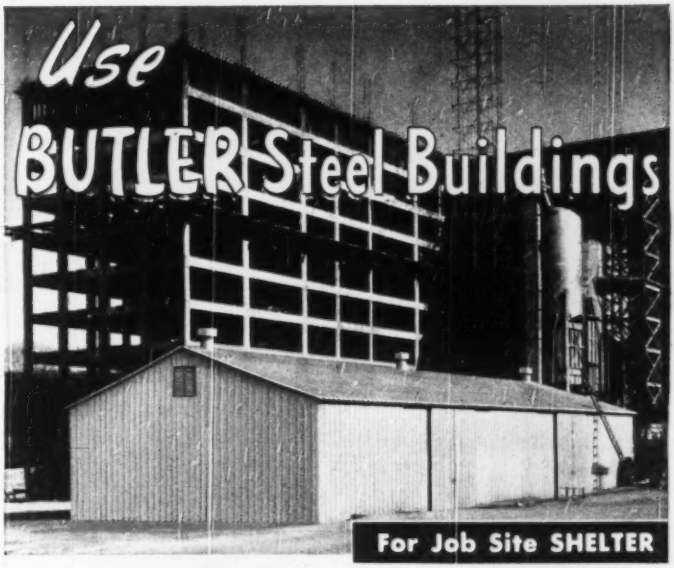
Wanna Write a Code?—Ohio's Program Commission is seeking a code writer for the new state building code it has undertaken to develop. Applications are sought by August 1, should be mailed to S. O. Linzell, Director of Public Works, Room 707, Ohio Departments Building, Columbus, O. The job is in Columbus, is good for a year or more.

Join the Party—Pan American Division of the American Road Builders Association wants U. S. equipment manufacturers to exhibit in the road show to be held at Rio de Janiero, Brazil, Nov. 12-30.

Park It on the Tracks—J. E. Greiner Co., Baltimore, says a proposed 2,500-vehicle parking structure above the Erie Railroad tracks in downtown Youngstown, O., could pay for itself in 30 years. Estimated cost is about $5,000,000.

What Am I Bid?—Both the city and county of San Louis Obispo, Cal., are bidding for the Salinas River Dam, built by the federal government in 1941 to provide water for an Army camp of the same name. It now supplies the bulk of the city's water, and the city offered $660,000 for the dam, a 25-mi aqueduct and pumping stations. The county had expected to be given the property free.

(Continued on page 12)



A 40'x100' Butler Building used by Patti Construction Company as job site shelter. Project is huge Twin Oaks apartment building installation in Kansas City.

For Your Client

Masonry front, display windows of Visalia, California, pump repair shop show adaptability of Butler Buildings in meeting clients' special needs.

Butler structurals and aluminum roof were combined with masonry front and sidewalls for this attractive implement dealer installation at Great Bend, Kansas.

Yes...Butler Buildings provide the low cost answer to your job site shelter needs and for your *permanent* quarters. Recommend Butler Buildings to your clients . . . for more profits to you. Ready for use in days instead of weeks. Available in a wide range of widths...20', 24', 28', 32', 36', 40', 48', 50' and on up.

It will pay you to get acquainted with your local Butler distributor.

BUTLER

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For Prompt Reply, Address Dept. NR27 at Office nearest You:
7418 E. 13th St., Kansas City 3E, Mo.
918 6th Ave., S. E., Minneapolis 14, Minn.
Richmond, Calif.

☐ *Send information on Butler Steel Buildings for use as job site shelters.*

☐ *Tell me how I can profit by adapting Butler Buildings for customers' use.*

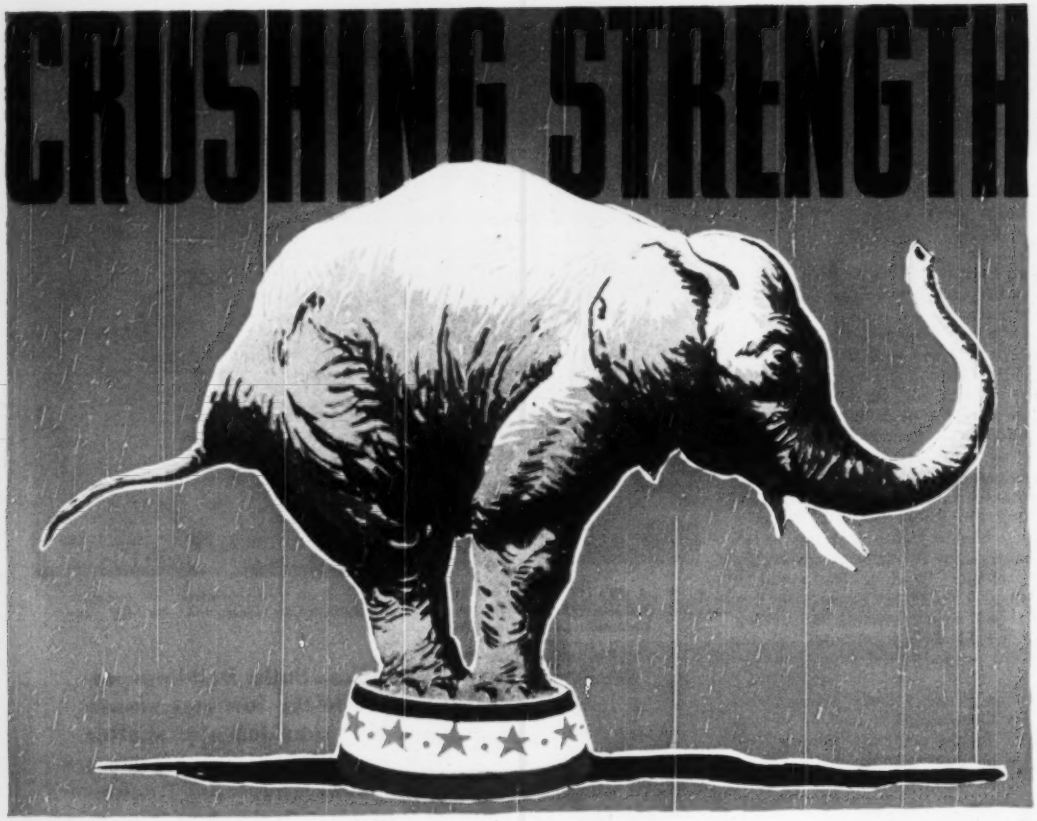
Name .....

Firm .....

Address .....

City ..... **Zone** ..... **State** .....

CRUSHING STRENGTH



Without crushing strength—or, for that matter—without all of the strength factors listed opposite—no pipe laid 100 years ago in *city streets* would be in service today. But, in spite of the evolution of traffic from horse-drawn vehicles to heavy trucks and buses—and today's vast complexity of subway and underground utility services—cast iron gas and water mains, laid over a century ago, are serving in the streets of more than 30 cities in the United States and Canada.

Such service records prove that cast iron pipe combines all the strength factors of long life with ample margins of safety. No pipe that is provably deficient in any of these strength factors should ever be laid in city streets. Cast Iron Pipe Research Association, Thos. F. Wolfe, Engineer, 122 So. Michigan Ave., Chicago 3.

CAST IRON PIPE

Strength factors of Long Life!

No pipe that is provably deficient in any of these strength factors should ever be laid in city streets

CRUSHING STRENGTH

The ability of cast iron pipe to withstand external loads imposed by heavy fill and unusual traffic loads is proved by the Ring Compression Test. Standard 6-inch cast iron pipe withstands a crushing weight of more than 14,000 lbs. per foot.

BEAM STRENGTH

When cast iron pipe is subjected to beam stress caused by soil settlement, or disturbance of soil by other utilities, or resting on an obstruction, tests prove that standard 6-inch cast iron pipe in 10-foot span sustains a load of 15,000 lbs.

SHOCK STRENGTH

The toughness of cast iron pipe which enables it to withstand impact and traffic shocks, as well as the hazards in handling, is demonstrated by the Impact Test. While under hydrostatic pressure and the heavy blows from a 50 pound hammer, standard 6-inch cast iron pipe does not crack until the hammer is dropped 6 times *on the same spot* from progressively increased heights of 6 inches.

BURSTING STRENGTH

In full length bursting tests standard 6-inch cast iron pipe withstands more than 2500 lbs. per square inch internal hydrostatic pressure, which proves ample ability to resist water-hammer or unusual working pressures.

CAST IRON

SERVES FOR CENTURIES

STOP AND PREVENT RUST

with

RUST-OLEUM

Rust can be stopped . . . stopped easily, surely, economically! RUST-OLEUM is the answer. For 25 years it has proved its capacity to stop and prevent rust at sea, in fume-choked industrial areas, on railroad rolling stock, bridges and signaling equipment.

RUST-OLEUM . . . an exclusive formula . . . protects metal with a tough, long-lasting pliable film that dries to a hard, firm finish that defies rain, snow, salt air, fumes and weathering. It adds years of extra use to metal roofs, tanks, sash, fences, stacks, gutters, downspouts, machinery and other metal surfaces.

RUST-OLEUM decorates as well as protects. It is available in all colors, aluminum and white. It can be applied to metal where rust has already started. You don't have to remove all the rust.

RUST-OLEUM is stocked and sold by Industrial Distributors in most principal cities. See our complete catalog in Sweets, or write for full information.

RUST-OLEUM CORPORATION

2531 Oakton Street • Evanston, Illinois

(Continued from page 9)

Portland Pipeline—Plans are being drawn by the city of Portland, Ore., for a new $5,000,000 water pipeline extending 24 mi from Mt. Hood to the city. It would replace one of three now in use, carry 100 mgd, and raise the system's delivery to 225 mgd.

Speed the Day—Albany, N. Y., can one day expect savings of $30 to $80 on every truckload of merchandise entering the city. Credit them to the New York State Thruway. That's the estimate of B. A. Lefevre, research and statistics director of the state's Public Works Department. He described the plan to limit Thruway traffic to specially licensed vehicles as "a new venture in highway finance," adding that it would pay for the road without raising taxes a penny.

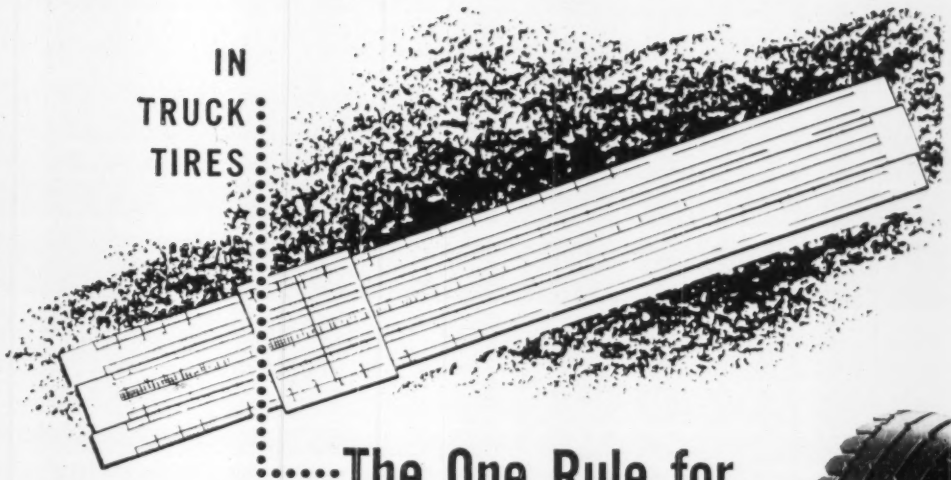
That's the Law—Appellate court at Hamilton, O., has upheld an engineering firm over the city of Middletown, O. The action came from an appeal by the city against a $27,100 judgment in favor of the Toledo firm of Jones & Henry (now Jones, Henry & Schoonmaker). The firm had a contract to design a treatment plant and interceptors. It was cancelled and later given another firm. The court upheld the award which the lower court gave the firm.

One Fast Switch—Gladding, McBean Co., tile manufacturers, ransacked the country to find the right pigment for the yellow glaze roof tile it contracted to deliver to the Ping Yuen housing development in San Francisco's Chinatown. No luck. Seems during the war, the atomic boys discovered that yellow glazed tile is a source of uranium oxide ". . . they're still taking all they can find, Ping Yuen's roof will be Precious Stone Green, please.

Pot of Cold Tea?—British roadbuilders are experimenting with rainbow-colored roads. Pink, green and cream paint has been applied to a busy highway near London Airport. The idea may be used on the Thames River Festival of Britain site to cheer visitors next year. There's even talk of extending the device elsewhere—as a safety measure, of all things.

Wrong Name—It's costing Morrison-Knudsen about $50 daily in lost time to improve the Going-to-the-Sun highway in Glacier National Park, Montana. That's because "dirty Gertie," a large bear, and her two cubs wander onto the highway to beg food from tourists, who park and cause traffic jams, delaying trucks. The job accountant probably would like to rename it the Going-Broke highway.

IN
TRUCK
TIRES



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MORE THAN DOUBLES DOZER OUTPUT . . . Over twice as fast with load . . . instantaneous "no-shift" gear selection lets Tournadozer drift load at high-rolling speeds. Big, 11' 2" x 43" Bulldozer blade carries up to 2½ yards each trip. High-speed reverse cuts cycle time in half. Runs, instead of crawls . . . does 2 to 3 times the work of ordinary crawler-dozer.

HAULS SCRAPERS . . . Tournadozer's faster power makes it a big-yardage prime mover for use with 4-wheel scrapers. Quickly coupled to drawbar of 13.5-yard, electric-control E-16 Carryall . . . or hooked up to the cable-operated LS Carryall . . . it's the fastest loading, hauling, spreading tractor-scraper combination you've ever seen!

LIFTS TO 14 TONS with side-boom Crane. Has 12' lifting height . . . 12' reach . . . lifts 5 tons in maximum reach position, 14 tons with boom raised. Finger-tip electric controlled. Maneuvers, spots on a "dime" . . . works, travels anywhere . . . carries load over pavement, through mud. Saves money on your jobs . . . earns good pay on sub-contracts or rentals.

TOWS SHEEPSFOOT ROLLERS . . . Tournadozer's 180 "horses" and 4-wheel drive give plenty of power and traction for pulling single or multiple Sheepsfoot Rollers. Heavy Tournapacker, illustrated, has up to 1100 lbs.-per-square-inch ground bearing pressure. Tournadozer's giant 21.00 x 25 low-pressure tires add to compaction without tearing up fill surface.

PULLS WITH 50,000# LOGGING WINCH . . . the Tournaskidder . . . an unusual combination of Bulldozer and Winch, puts both ends of Tournadozer to profitable use. Bulldozer with special A-frame mounts on front . . . heavy-duty Winch develops 50,000-lb. line pull for skidding pipe, snaking logs, etc. Plenty of power for any winch application . . . makes either end equally productive.

ROOTS HARD MATERIALS . . . With handy hookup to rear cable PCU, versatile Tournadozer is ready for Rooter service. Plenty of drawbar pull to break up toughest layered rock . . . saves blasting. Other uses for Tournadozer: towing sprinklers, drawn graders . . . pulling heavy equipment and supplies mounted on flat-bed trailer . . . hauls anywhere on or off highway.

PUSHES TREES OVER . . . Forked, 23½'-long boom reaches high up on tree for extra leverage. When Tournadozer shoves, boom angle creates down-pressure on ground-grip tires . . . as the push increases, so does the traction. Uses same A-frame and PCU as Bulldozer blade . . . is readily interchangeable. Quickly pays for itself on large clearing contracts.

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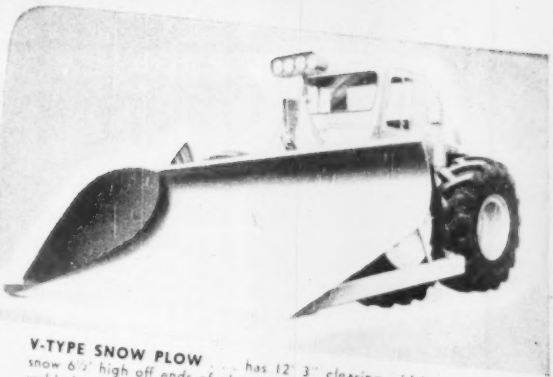
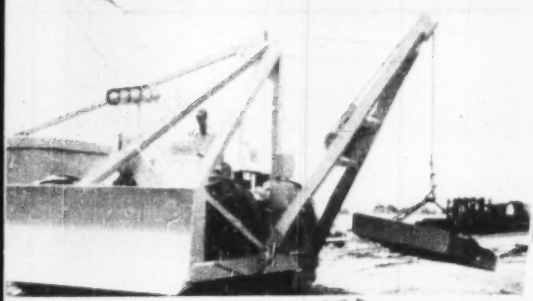


V-TYPE SNOW PLOW . . . has 12' 3" clearing width . . . flows snow 6½' high off ends of plowshare blade. Vertical divider plate, welded in center of "V", cuts frozen drifts . . . eliminates plowing snow back onto road when widening. Adjustable runner shoe, giant tires protect surface. Assures steady earnings during winter months! Optional electrically-operated Snow Wing available.



ANGLEDOZER . . . for extensive side-hill work, Tournadozer's regular Bulldozer is easily interchangeable with Angledozer blade and side arms. Husky 13' x 4½" blade can be angled 20° right or left . . . optional electric motor tilts either corner of blade 10" up or down for digging with blade point. Works off the same A-frame and fast-acting electric PCU as Bulldozer blade.

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Experienced contractors figure the time, labor, and money-saving advantages of Armco Corrugated Metal Structures into their bids. On drainage work for a southern highway the winning contractor was able to bid 26% lower for Armco MULTI-PLATE PIPE-ARCH than competing bids for a monolithic box structure.

CONSTRUCTION TRENDS

ONLY THE BEGINNING

President Truman's proposals on military spending and economic controls are only a beginning. The proposals—and their impact on construction—are detailed on pages 23 and 24, this issue.

In his message to Congress, the President promised higher taxes and increased military aid to Western Europe and other countries, as part of the program to follow.

Aside from this, only time can spell out the restrictions that will be put on non-essential construction, the mechanics of controls, the demands that will be made on the industry for defense construction and for essential industrial building.

But clearly, two things stand out:

1. It will be months before direct controls on the industry and on construction materials can be made effective. The first steps—assigning priorities on steel, tightening credit for new residential and other building and other voluntary or indirect controls—will affect only part of the work now underway.

2. The industry has a vast amount of work started or only recently put under contract that must be finished. Korea already had highlighted the shortages of materials—from gypsum to steel—that came with the rapid acceleration of construction this spring. And Korea touched off price increases, emphasizing inflationary trends, that will have their effect on construction everywhere.

The step up in actual military spending will affect construction only slowly. In steel, for example, military production has been taking probably only one to two million tons of steel a year.

Even stepping up military production as fast as it can be done short of all-out war, it is unlikely that military demands would account for as much as four to five million tons of steel by the end of this year. Priorities and voluntary allocation can shunt that much steel into military production without much trouble.

But what goes to the military—in steel, copper, lumber, or other materials—must come from civilian production. Priorities and allocations will leave civilian users scrambling for the materials that are left. With the pressure already on materials, the only prospect is that they will be increasingly difficult to get in the months ahead.

Big as are the questions in the Truman program, their effect on the business outlook is overshadowed by potential indirect effects. For example, business generally has been adding very little to its inventories this year. Consumer demand has been so great that little has gone into business stocks. Inventories are low compared to sales today.

However, if even retail business now begins to build stocks—in the months before inventory controls can become effective—pressure on prices will be strong. War-scare buying by consumers has been increasing in intensity in recent weeks. This, too, can add powerfully to inflationary potentials if the public continues to buy and hoard as it has so far on such items as sugar, tires and similar items.

Perhaps the biggest question is in Korea's impact on business plans for new plants and equipment. Korea caught the nation with marked shortages of freight cars, steel capacity, non-ferrous metals, and other basic materials. Reserves of electric power capacity are much smaller than they were before World War II. Industry generally is pushing its capacity ceilings, a situation vastly different from that which prevailed 10 years ago.

To expand its capacity, the steel industry last week announced plans to step up its modernization and improvement of equipment and to start work on new ingot capacity. The target is to raise steel capacity 6.4 million tons in the next two years, according to the American Iron and Steel Institute.

One of President Truman's basic points was to request powers and financing authority to speed expansion of defense industries. Whether privately or government financed, business will step up its purchases of new plants and equipment to meet the demands that will face it.

All this will raise demands on the construction industry. It will also increase pressure on materials—making it necessary to switch still more from civilian production to the preparedness program.

It is too early yet to forecast the impact of all these things on business in general or on construction. But it is clear that, from now on, business' major problems will be those of wartime: How to step up production and how to get the materials which will be needed to do it.

Along with that, pressing on all business will be the problem of rising prices. The nation simply does not have the organization effectively to handle direct controls on prices, production and materials as it did in World War II.

Without that, the controls proposed by President Truman probably cannot hold the price line. The demands for goods promise to be too strong. So almost inevitably prices will creep up as they did before and as they've started to already.

In short—even though this is only partial mobilization—many of business' wartime problems are coming back in full force.

"Impossible" Problem Solved by Welded Design

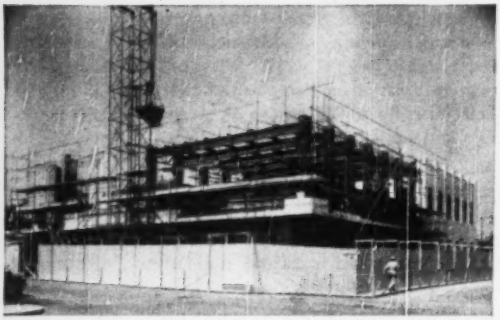

Fig. 1. *Partially completed framework for the Associated Telephone Company. General Contractor: Beyer and Abrahamson, Los Angeles; Steel Fabricators: National Iron Works, Los Angeles.*

Fig. 2. *Lowering second floor 72' x 48' steel and concrete slab to its proper elevation. Floor is constructed from 30" x 124# I beams to carry floor load over 48' span.*

By **MAURICE SASSO,** Consulting Engineer
Los Angeles, California

THE unlimited freedom in design that arc welding gives the structural engineer now allows him to develop many new cost-saving erection techniques impossible with other construction methods. Such has been the case of an addition made to the Associated Telephone Company exchange in West Los Angeles, California.

The "impossible" problem on this project was to erect the addition around the original structure without disturbing $2,000,000 worth of delicate telephone exchange equipment. After sealing off the original structure against dust and moisture, the new outer framework was erected entirely by welding, eliminating all danger to equipment from vibration and the riveting noise which would have greatly disturbed, if not partially paralyzed, the 168 long distance telephone operators within the building.

Particularly unique was the design of the second floor erected in an elevated position 65" above the original roof and then lowered into position as a unit after the roof was removed. Fourteen open box columns, fabricated by arc welding, were provided with long screws on which the 212 ton steel and concrete floor slab was suspended. With a crew of 17 men the slab was finally lowered by simultaneously turning the support nuts on each column.

As a result of welded construction on this job, it was possible also to reduce the steel tonnage by 18% and cut erection time in half.

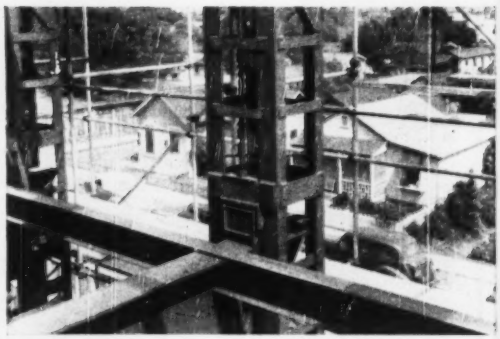

Fig. 3. *One of fourteen open box columns shop welded at low cost with Lincoln "Fleetweld 5" electrodes and Lincoln "Shield-Arc" welders. Note simple splice on top flange for continuous beam and girder construction of floor members. No erection bolts are used.*

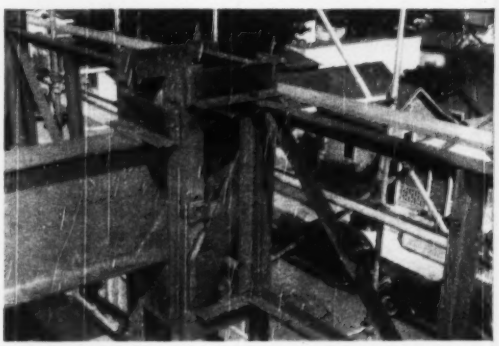

Fig. 4. *Typical girder-to-column connection. Girder seat and top clip on either face of column form a rigid joint.*

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Korea and Construction

A CHANGE in the construction pattern is sure to follow the changes in government action and public sentiment caused by the Korean war. The present crisis is merely the excuse. The reason lies deeper—in a new and long-overdue appreciation of what could come later. The pattern change, therefore, is more permanent than temporary.

As background: We were coasting along in a period of boom and inflation, dreamily thought of as of peacetime variety even though $13-billion of military expenditures played an important if not a prominent role in it. Suddenly preparedness for war becomes a dominant objective for quick instead of leisurely attainment. The $13 billion is upped to $23 billion with more sure to follow. Imposed on an economy already operating at full capacity, these extra billions can only enter a claim against materials previously destined for some civilian use, against wages paid to manpower now working for some civilian purpose. And were the claims to be entered in direct competition with things as they are, confusion and inflation would result.

So a return is to be made to the wartime devices of priorities, materials allocations, credit controls and higher taxes—with price and wage controls as almost necessary next steps. President Truman in his message to Congress stated the need, asked for aid and in many respects spelled out the shape of things to come.

What this means to construction is partly apparent, and will become clearer soon. The whole meaning will unfold more slowly. The requirement of higher down payments on house financing controlled by the Housing and Home Finance Agency and the Veterans Administration will take some of the steam out of the housing boom. Allocations to be imposed on steel and aluminum—perhaps on lumber and cement—will have their effect on many types of civilian building. Big steel-using pipelines will have to demonstrate their essentiality. Some big bridge plans may have to be postponed.

For these losses, however, there will be compensations. Construction for war is as necessary as construction for peace, and sometimes more voluminous. Thus government help for plant expansion—by direct loans, guaranteed long-term contracts or accelerated amortization for tax credits—already being talked about—presages activity in industrial buildings. The strategic highway net is nowhere near up to needs so that road construction should receive a high priority. Dam building where power is a factor should likewise be high on the list. Depending on the size to which armed forces are to be expanded military training installations will need to be reopened or rebuilt. No lessening in the construction tempo on facilities for the atomic and hydrogen bomb programs could be tolerated. There will be construction at bases abroad, such as the Pacific islands, even Africa.

Were this shift to come about quickly and smoothly all would be well. It won't. For government agencies to determine requirements—say for steel for trucks, tanks and military hardware—and to get it tagged by priority or allocation could easily take three months. Setting up the paper procedures by which materials will be channeled into military and funneled away from civilian work may take even longer.

In the meantime uncertainty will prevail. Construction projects in the planning stage will be slowed down. For those under way there will be a scramble for materials; others may mark time until it is certain that they will not have to be stopped. Bidding will be subjected to doubts on costs and material supply. There could result a falling off in new construction contracts during this period of transition. And even though, as seems likely, this period will be short, the construction industry then faces the need of doing things the hard, government-controlled way that became so familiar in the Forties.

The prospect is distasteful but not entirely discouraging. Construction is due for an adjustment in types of projects and in business procedures, but not in total activity, after the period of transition is passed. A fully operating economy is still the order of the day. Only its pattern is destined to change. And construction, at a fairly uniform percentage of the whole, is a definite and necessary part of any conceivable pattern.

Education for Management

THE REQUIREMENTS to be imposed on the construction industry by a half-war, half-peace economy give some remarks by Carl H. Cotter, president, Merritt Chapman & Scott Corp. even more significance than they had when they were made two weeks ago. Admiral Cotter was a member of a panel discussing management at the ASCE-EIC joint meeting in Toronto.

Management needs education, he said, not in how to produce more—it knows that—but in how to humanize its operations that the superior social advantages of private enterprise may be plain for all to see. Education of existing management in this respect transcends the importance—great as that is—of educating the young engineer for management positions. But for the young engineer, too, it is management's responsibility to give him a practical and effective internship in human relations.

Leadership does not depreciate the value of technology—it merely supplements it with an appreciation of human values. Our task in this period of building for war and working for peace is to maintain and develop our private enterprise system as the best of all types for people to live under.

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ENGINEERING NEWS-RECORD

JULY 27, 1950 VOL. 145, NO. 4

Change of direction ahead for construction due to war

Washington doesn't know yet what's going to happen—Mass housing probably will be hit first and hardest—Power construction should boom, irrigation, flood control slow

E. E. Halmos, Jr.
Managing Editor
and
Vincent B. Smith
Associate Editor

Whether half-war in Korea grows more serious or not, the construction industry faced a drastic change of direction this week—from booming peacetime to an uncertain, partly-war footing.

That much was the only really clear fact to emerge from Washington as the government got set for a huge build-up in armed strength.

President Truman's demand July 19 for vast new funds for the armed forces and for a number of war powers, (see p 23)—had already sparked the governmental machinery into motion but the motion isn't on any coordinated basis yet. And construction—along with most other industry—is in the air as to what might be demanded of it, (see p 24).

• **Washington doesn't know**—A survey of the Washington agencies that will be affected and that will have the greatest effect on construction elicited a few facts and a lot of guesses. But they were educated guesses, probably as good indicators as can be found on what construction faces. The facts:

1. Nobody actually knows what will be required. Neither the Corps of Engineers, nor the Navy nor civilian agencies have precise directives.

But the plans are being made now, this week and next. When they are made and handed down by the higher command, the agencies will be able to throw away their present somewhat frantic attempts at planning, and start to set things going in an orderly, sense-making way.

2. Whether Korea is wiped up in a short time, or whether we go deeper from there, the "business-as-usual" phase for construction is fast running out. There will be controls (there's already one on housing, see p 25) on credit and priorities on some materials that will change the face of the industry.

3. Congress will go along with the administration on nearly everything it wants that seems reasonable or necessary, (see p 23).

• **The guesses:**—1. Civilians and military agree that what goes on from here is something that might be classified as a three-phase development:

First—and we're there now—is the "lets-get-operating-somehow" stage. In this stage, a lot of initial planning is done, a lot of volunteers come in, a lot of rules and a lot of experience are dusted off, a lot of preliminary planning is under way. You do what you can to head off inflation.

Next comes the "beefing up" period. You build-up your staffs to implement the decisions you made in Step 1, get your regulations and liaison straightened out.

Third is the "walk softly but carry a big stick" stage. There you start enforcing priorities and other regulations, start moving military forces out, get your organization thoroughly into the war effort.

The timetable on these steps coincides remarkably, from agency to agency. Few think Step 1 will last longer than a month. Most think Step 2 will take two to three months—then into Step 3 for the duration.

2. At the top of the heap—eventually—will be something approaching War II's War Production Board. But for the first months, the Commerce Department probably will set up its activities to handle the civilian production side, until a "WPB" is organized and functioning. Then Commerce will fit into the organization where it can.

3. The impact on construction (except housing) will be slow in hitting for a while. But there will certainly be priorities on certain materials: Steel, lumber and cement, in about that order. Informed opinion figures they'll probably be voluntary controls at the outset, but soon become mandatory.

4. There won't be much done about manpower controls unless things get a lot more serious. It's a dangerous move politically. And as

(Continued on page 26)

Brisk buying, no panic in New York

There'll be no panic buying of construction equipment or materials. There can't be—the market is—and has been—in fairly short supply since the war. (For a broader view, see p 24.)

That's the consensus of contractors, distributors and manufacturers in the New York area who were canvassed by ENGINEERING NEWS-RECORD last week.

Distributors are buying all the equipment manufacturers will deliver. Dealers generally are carrying a substantial number of back orders on major pieces of equipment.

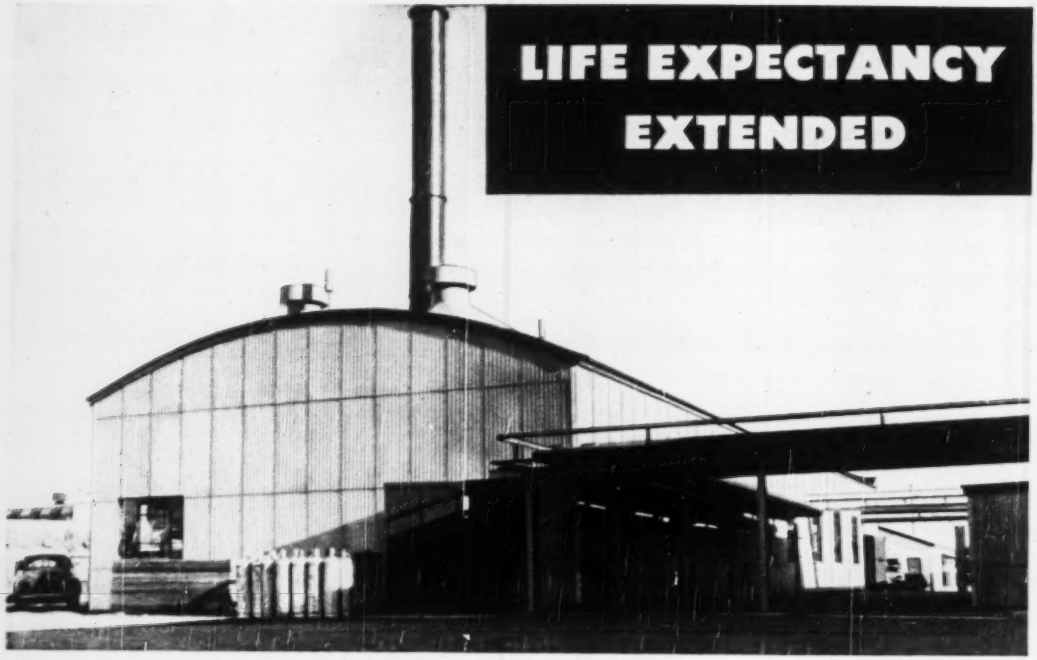
However, Korea will have a decided effect on the used equipment market. Many contractors, planning trade-ins, will hang on to equipment to have extra units available. Equipment that's nearly done, though, will be traded that much faster. No one wants to be caught short.

Price increase are sure to come, those sources believe, but only in keeping with the trend evident since the end of the war—and that's been slow, but steady.

This week, manufacturers had not instituted allocations on construction equipment. Again, they haven't had to. Allocations have been effective unofficially since the end of the war, because of brisk buying. No change is anticipated here.

As almost everyone else is doing, contractors, manufacturers and distributors have adopted a "let's sit tight" attitude. Manufacturers are operating at full blast and keeping production high.

Prospects of the normal summer end slackening of production in some lines have pretty well vanished. ENR's sources indicated that distributors who had been urged for months to buy have begun to pour in orders. Manufacturers say this rush will obviate their normal seasonal fluctuations.



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Limited mobilization asked by Truman; he seeks troops, funds and controls

Three problems face nation, President warns—Calls for military build-up of U. S., allies, as well as needed Korean strength

The United States got its first look at the blueprints for world peace last week. The designs showed it will be quite a job.

President Truman's message to Congress, which made the disclosure, showed three tasks—and the steps to meet them. The tasks:

1. To provide whatever it takes to win in Korea.

2. To increase U. S. armed strength to counter aggressions elsewhere in the world comparable to that being encountered in Korea.

3. To furnish military aid to our allies.

To accomplish these tasks, the President did these three things:

1. **Manpower**—Budget restrictions on military personnel were suspended. The Defense Secretary was authorized to draft men and to call into service National Guard units and individuals and reserve units in such volume as may be required. Congress was asked to lift statutory limits on the strength of the armed services.

2. **Money**—Specific requests for appropriations totalling about $10 billion were on their way to Congress this week. These funds are strictly for U. S. armed forces. When the arms needs of our allies have been calculated, Congress will be asked to appropriate for them. There were predictions that the allied aid might run to another $5 billion, that the full cost "over the next few years" might run to $50 billion.)

3. **Economic controls**—Five different types of economic programs were proposed by the President. He made it plain that he'd invoke a sixth—price control and rationing—if the five were insufficient to preserve economic stability and make possible the arms production which is needed. Those controls proposed now include:

• **Priorities and allocations**—These would be aimed at making available the materials required for effective fulfillment of arms contracts; would limit the use of strategic materials for non-essential purposes, as required; would prevent inventory hoarding, which could hold up arms manufacture and destroy stable price structures; and would, where necessary, requisition materials necessary for defense purposes, from excessive inventories or elsewhere. Informed opinion sees these controls as being voluntary at the outset, but it also expects that they'd become mandatory rather soon.

• **Reduced government activity**—A review of federal programs has been ordered, aimed at reducing their demands for services, commodities, materials and manpower better used for defense, (see p 27).

• **Increased taxes**—This program has yet to be presented. But it will aim at several things—making the added defense effort as much as possible a pay-as-you-go effort, to hold down the debt and lessen credit expansion; absorbing purchasing power that might bid up prices for a smaller supply of civilian products; preventing profiteering; and spreading the tax burden equitably.

• **Credit controls**—Congress was asked to enact controls on consumer credit and credit used for commodity speculation. Those credit controls now within the President's power were invoked. Particular emphasis was laid on control of private credit for real estate, (see p 25).

• **Production financing**—Congress was asked to authorize loans by the federal government which would boost production of those things necessary to defense. Also sought was authorization for long-term contracts which might spur the production of scarce materials.

• **World War III possible**—Mr. Truman's message last week was devoted almost entirely to reading the record on the Korean war and to proposing these plans for meeting that situation—as well as others like it which may arise. But it did contain one bald warning as to the possibility of a third World War. Said the President:

"I am sure that those who have it in their power to unleash or withhold acts of armed aggression must realize that new recourse to aggression in the world today might well strain to the breaking point the fabric of world peace."

Pretty generally, that warning—set in the pattern of a trenchant program for a U. S. military build-up and backdropped by a shooting war in Korea—was interpreted as a warning to Russia: It will get a world war—without great hesitation—if it insists upon having one.

• **What does it mean?**—Plainly, the President's program was one of limited mobilization. Had it been limited to meeting the Korean situation, such a program might end with the Korean war—whenever that may be.

But the program was extended to a thorough going U. S. military build-up well beyond Korea. And it calls for even more military assistance to our allies than had been planned before June 25.

Thus, it's no temporary program. Largely, its termination date is in Russian hands—world war or an acceptable method of world peace.

Three real threats exist to the possibility that the present program could suffice:

1. War.

2. The controls could prove inadequate even for the limited mobilization.

3. Inflation. If the additional military demands provoked inflation, complete controls probably would become necessary. The President warned that price control and rationing would be invoked if needed. Beyond that, there could be wage freezing, a manpower draft, such devices as the Controlled Materials Plan of World War II, strict limitation of non-military production, and rationing.

None of these are in the program Mr. Truman called for last week.

Congress opens hearings on defense-powers bill

Congressional hearings started July 24 on the first bill sought by the President for additional powers to implement the semi-mobilization program. Prompt action by Congress is expected, with most of the authority being granted as asked. The bill proposes:

Priorities and allocations; the authority to requisition what's needed for defense; loan and contract powers for the expansion of military production; and broad credit control, both in consumer purchase and commodity speculation, (see above story). The bill is directly in answer to President Truman's message last week.

With the authority to allocate materials, the bill gives power to control inventories by requiring full information when requested from businessmen. With credit controls, allocations, priorities, and inventory control, coupled with taxation to come later, Congress hopes to control inflation without resort to price control.

House and Senate hearings on the bill are going ahead simultaneously this week, with NSRB Chairman Symington; Commerce Secretary Sawyer; General Bradley, Chairman of the Joint Chiefs of Staff, and Bernard Baruch as the main witnesses. The Senate hopes to act on the measure early next week, with House action to follow soon after. Congress may well 'pass the bill—tightened as to language, but without basic changes.

Construction uncertain, study shows; price boosts and shortages expected

ENR survey in major cities finds little agreement—Few contractors expect to slow or cancel work—Little voluntary job cancellation

The Korean war's first month has created uncertainty through the construction business.

That's the finding of ENGINEERING NEWS-RECORD's Business News correspondents in 19 major cities. Their probing could turn up significant trends in only three of 10 categories about which they quizzed builders, dealers, engineers and contractors.

From their digging, these trends were established:

1. Material shortages are on their way—if they're not already here—in steel, lumber, cement and cinder block, nails, lath, lime, sewer pipe of all kinds. The count here was 14 to four predicting shortages.

2. Prices will go up—at least in the opinion of those who would answer the questions. This tally was 10 to one predicting increases in August, six to nothing indicating increases thereafter. So far, lumber price increases have been the only ones to turn up.

3. There'll be very little voluntary slowing down or stopping of construction. Respondents were 15 to three against voluntary slow downs of work under way.

• **No steel**—About the only other unanimity came from construction men in seven cities where materials already are being allocated among builders. Steel is under allocation in each. But 12 other cities reported no materials allocated yet, although some expect allocation soon.

Perhaps surprisingly, home builders didn't seem much impressed with President Truman's order tightening housing credit, (see p 25). Cleveland and St. Louis saw the order hurting housing. But Seattle, Kansas City, Birmingham, Denver, Philadelphia and Atlanta indicated no housing construction worries. In other cities, there wasn't enough sentiment to provoke specific comment.

• **St. Louis looks ahead**—From their answers, at least, St. Louis construction men were the most forward-looking of the lot. They saw considerable business in building underground shelters and plants if a world war comes. And they're speculating about the business that might arise if the military decides to get serious about war plant relocation away from coastal areas.

But most builders seem skeptical about a return of the lush war generated construction which kept them so busy a decade and less ago. Only half the cities queried would answer directly the question about the likelihood of war business, and their answers varied. There seems to be a realization in the trade that so much plant—both military and industrial—was built last time that only a minor—if any—repeat performance in these categories is indicated. And that sentiment matches what the Corps of Engineers is thinking, right now, anyway, (see p 26).

• **What about labor?**—Reports on the availability of labor split unevenly. Eight reported shortages, bricklayers first, then carpenters. But 11 cities saw no shortages now. Rather widely, there were some reservations as to what effect the draft might have.

But several respondents noted the possibility that a slowdown in housing, if any, would free men for other building. The south reported no shortages. The far west reported shortages at two out of three points. Elsewhere, shortages set no discernible pattern.

Premium pay for scarce workers—a phenomenon which added so substantially to rising housing costs several years ago—is already a fact in eight cities. Ten others couldn't find any, although some seemed rather certain that it already exists. A number of answers said "none yet." Where it's being paid, bricklayers are getting it.

• **Restraint or reserve?**—The trade was split also, on forward buying. Such of it as was reported is concentrated more heavily in materials than equipment, according to the 18 answers received. Ten cities reported it, eight found none. It's least prevalent in the Plains states, the survey showed.

Probably quite indicative of the uncertainty which still prevails in the industry after a month of shooting war were the answers on a question concerning price rises other than those directly affected by the nonferrous metals. (Nonferrous metals have been rising steadily since March.) Ten cities reported price rises independent of the nonferrous metal market. But the trade isn't necessarily blaming these on Korea. These increases often antedated the war—or are attributed to other causes than war. Seven cities reported no such price increases.

• **Prices heading up**—Uncertainty, though, was most apparent in answers to questions on price prospects. They were sought for August and for the period after August. Only 11 would guess at next month's lineup—and all but one guessed that prices would go up. Only six would speculate about the period thereafter. They all saw prices rising. Curiously, no one spoke of grey markets—a condition whose return seems almost universally foreseen in speculation about business generally.

Apparently the trade hasn't yet made up its mind whether to speed work now in progress, just starting or about ready to start. Nine cities reported no speed-ups, eight found them. But there was no such indecision regarding whether to slow or cancel work. Only three of 18 cities reported any—one a cancellation of housing, the other a slow-down of the same type work. The rest figured to go ahead until halted by factors beyond their control—federal order or material shortages.

California is uncertain of its building future

Construction men in the northern California area centering in San Francisco aren't sure yet just what the impact on their business of the Korean war will be.

Included among the few facts are these:

A $50,000,000 bond election to finance a San Francisco subway system has been cancelled.

The Navy people have authorization to hire 2,000 shipyard workers. This is bound to make some inroads on the total construction labor force in northern California.

• **See private building down**—Contractors expect private construction ultimately to decrease, due to higher prices and uncertain conditions. However, they think that construction of military-type installations will keep total volume at about present figures. Conversion of World War II plants to World War III uses should be coming along soon.

On the other hand, suppliers say that clients who weren't sure whether or not to go ahead with a job now or next year are jumping right in and placing their orders. This is particularly true in jobs involving steel, especially sheet steel.

Contractors are chary of submitting firm bids on long-term contracts where defense is not a factor. One firm now preparing figures on a large building job says it probably won't enter a bid—and if it does, the bid will have a large contingency factor.

Credit controls hit largest housing year

As war measure, President tightens rules for federal mortgage assistance on FHA and VA housing

Until last week, it looked as if the U. S. couldn't miss a record breaking year for housing starts. With 687,000 starts in the first six months, the experts foresaw 1,250,000 starts for the year. Then at mid-week, President Truman pricked the housing bubble with a group of directives that will make it much harder to sell housing.

President Truman's letter to HHFA Administrator Raymond M. Foley reduced by half the allowable increase in mortgages that could be insured by the Federal Housing Administration. Congress in the Housing Act of 1950, authorized an increase of $1.25 billion. Mr. Truman approved use of $650 million.

• **Down payments raised**—Down payments will be increased by several means. For both FHA and the Veterans Administration, the President set as a ceiling on valuations the construction costs of July 1, 1950. All later cost increases must be covered by cash payments on the part of the buyers.

Further, veterans will no longer be able to get 100% home loans. The GI, Mr. Truman declared, must make a cash down payment of at least 5%. For the FHA borrower, the down payment has already jumped. Mr. Truman asked reductions in maximums for principal amounts or percentages of appraised value, or both, on FHA insured mortgages. The agency wired its field offices to reduce mortgage ratios by 5% across the board immediately, and to cut the maximum mortgage amount from $16,000 to $14,000.

• **Affects veterans only**—These reductions affect only new applications. Commitments already made could carry new FHA housing starts three months or more into the future.

FHA also acted on another request of the President. It reinstated the 10% down payment on repair and modernization loans—effective Aug. 1.

On the big six-year public housing program, just getting under way, the President asked Foley to limit starts in the second half of the year to 30,000 dwelling units and to re-examine the whole program in the light of the international situation. Up to June 30, slightly more than 3,000 units had been started. Public Housing Administration expected to have 50,000 under construction by the end of the year.

• **College housing hit**—Direct loans to educational institutions for student and faculty housing have been suspended by the President's order. Congress recently authorized $300 million for such loans, but no commitments have yet been made, and none will be.

Federal Home Loan Bank credit to member institutions for expansion of their business has been reduced, in accord with another of Mr. Truman's requests.

The bank board instructed its regional banks to cut the maximum line of credit for this purpose from 50 to 30% of the member institutions' borrowing capacity. This regulation will have only minor local effects, as borrowings of the savings and loan associations have been small.

• **Seek material savings**—Finally, in broad terms, the President instructed both HHFA and VA to take such further actions as may be necessary to curtail use of materials needed for defense.

To Chairman Harley Hise, of RFC, parent agency of the Federal National Mortgage Association, Mr. Truman gave directions that regulations be re-examined "to make sure that further mortgage purchases are held to the irreducible minimum." As the big federal secondary market for FHA and VA mortgages, FNMA recently stiffened its rules to avoid being swamped by offerings. The President recognized that the current regulations "have substantially reduced the volume of purchases."

"HALF-WAR" BRIEFS

Commanders of military districts have authority to take what steps they choose to insure security in their areas. Contractors who have job security problems should see the commandant of the Navy District or Army Area in which the job is located.

The St. Louis consulting firm of Sverdrup & Parcel, Inc., has gone to war. It formed Aro, Inc. to manage and operate the Air Force's new Arnold Engineering Center, now under construction at Tullahoma, Tenn. It will conduct tests ordered by the Air Force at the new center, which is to be a strategic part of Air Force's development program.

Pension and other rights of workers who are called to arms will depend in large part on what your labor contract says about them. Basically, the draft law provides that a returning veteran is to be treated as if he were on furlough or leave of absence. Thus, by law, such a workman is entitled to everything your custom—or contract—allows such workers. Contract provisions, of course, may extend beyond custom.

What would War III cost—if it comes to that? There's a guess—which could be informed—going around Washington that it would come to $1.3 trillion—or $1,300 billion, if that's any help.

Engineer troops are at it again

It took Engineer troops just four days to get "Cleveland airport" operational. That, if anything, ought to prove that U. S. construction troops haven't lost their skill."

For "Cleveland airport," according to NEW YORK TIMES Correspondent Lindesay Parrott, is the nickname of a front line air base somewhere in Korea. One of the numerous air strips abandoned when the Japs were shoved out five years ago, it was taken over by U. S. troops July 8. Four days later, F-51 Mustangs, a World War II U. S. fighter plane, were using it. And 90% of everything needed to get the strip operational was flown in.

(Location of the strip—which last week was closest to the advancing North Korean troops—was undisclosed. It was likely, however, that it was close to Pohang, in east-coast harbor town about 160 air-line miles from Pusan. The latter is the south-coast harbor through which the U. S.-Korean build-up has been carried on. As ENR's July 27 issue went to press, McGraw-Hill World News had not received from A. W. Jessup, its correspondent, at a new air base in Korea, any of the material he had said he was filing.)

Wherever it is, "Cleveland airport" got its name from its commander, Parrott wrote. That would be Col. Robert W. Witty, an enthusiastic Clevelander. The strip's Air Force code name remains secret, along with its location. The latter is known only to the troops occupying it, their superiors and the Communist guerrillas who were firing on it nightly, last week, from surrounding hills.

Parrott described the job as "an outstanding achievement in speed and technique." Engineers worked around the clock to achieve it, he added. The fighters it serves, he went on, have driven North Korean transport from the roads and, temporarily at least, have halted the Communist advance along the east coast.

Principal purpose of the strip is to spare the Mustangs the long flight from Japanese airfields which had limited the time they could spend over targets.

(Continued from page 21)

a matter of fact, most planners feel that present indicated draw of manpower to the armed forces won't be more than industry can absorb—with some annoyance but little or no interruption.

5. Very few competent observers think that a year or two will do the job. Almost unanimously, they think of what's ahead in terms of years—maybe four years as a minimum.

• **How about the reserves?**—Many a construction firm, many an engineering office and many manufacturers whose staffs now contain men with military service—or who are active reservists—had one immediate worry after the President's talk on Wednesday: Who are they going to order back, how many, and when?

The answer can't be made categorically—the plans aren't that concrete.

But the best estimate of the situation seems to be this:

What's required in Korea at the moment (and at first in any other spot) is combat engineering outfits. These the Army and Navy more than likely can supply.

The outfits moved to the fighting areas will have to be replaced at home from the reserves. And the reservoir will be filled in this order: Volunteers, the organized reserve (active, staffed, paid units), and the volunteer reserve if necessary.

Actually, military men say that there are plenty of reserves available on a voluntary basis—unfortunately not all in the right specialties. So some reservists will be ordered to duty.

But nobody thinks there will be any mass mobilization (in spite of the calls for Marine reserves), and very little ordering of complete reserve units to duty. The general expectation is that the armed services will move fairly slowly and cautiously on this—the men ordered to duty will be few and selected. The units ordered to duty in toto will be even fewer.

And one thing more: It's more than a good bet (unless things get a lot worse) that all the services will take measures to consider a reservist's job, family responsibilities, etc., if he so desires, before ordering him to duty.

• **The change**—For construction generally, here's how it looks:

The step last week to raise down payments on FHA financed housing, and to require down payments on GI insured loans is expected to cut into housing drastically—not at once (because of existing commitments) but in a couple of months. (see pp 24—for the industry's views—and 25).

NEARLY FINISHED—Most of the work remaining to be done on the Reclamation Bureau's Anderson Ranch Dam, on the south fork of the Boise River near Boise, Idaho, will be on the powerplant and spillway. The edge of the earthfill dam may be seen at upper left. Projects such as this will be pushed under the war program (see p 27). (USBR Photo)

Hardest hit, probably, will be the mass housing builders, who depend on generous credit to their prospective buyers. (Incidentally, this is one way to free some materials without other controls. Obviously, if you don't build so many houses, you won't need so much lumber, pipe, etc.)

Federal construction won't stop—but it will change emphasis. Anything that has a "defense" or a "power" flavor will be pushed ahead. Everything else will be slowed down or stopped, for psychological reasons, if no other. A lot of power dams and power plants will be built, but a lot of irrigation and flood control work, a lot of postoffice buildings, a lot of park improvements, will go by the board. There may be a call for speed up in going projects, (see p 27).

• **Highway works uncertain**—It's hard to pin anything down on highways. At the moment, most officials are convinced that the highways under way now will go ahead to completion of project boundaries. But after that, and on newly proposed work, everything will come in for searching restudy with the "defense" motive as ruling factor.

Everything stems back to the uncertainty of the overall plan. Congressional leaders, for instance, are saying they will get the 1952-53 highway bill through this session on the plea that biennial state legislatures must have time to act. But no one wants to say how much money he thinks will be appropriated next year for the 1952 program.

By the same measure—"defense"—it seems likely that a lot of pipeline work will slow or stop, along with some sewage disposal and water supply projects. And any shortage in steel will be a blow to industrial and commercial construction.

Another thing of paramount importance is the matter of prices. The government, for the moment, is shying violently away from any talk of price controls—for the same reason it doesn't want to talk about controlling manpower. But many an observer talks freely enough about the reappearance of "grey markets." And obviously, an economy with some shortages and no control will produce erratic material prices—and very difficult bidding problems for contractors.

• **Not easy**—The point in all this is that construction generally won't find so many places to turn as it did the last time.

Most of the industrial plant (barring radically new weapons or atomic energy construction) is already in existence. It's either in "mothballs" or in the hands of manufacturers from whom it can be recovered on short notice, (see p 24).

The shipyards—or enough of them—and the drydocks and port installations also exist.

And the armed services think they have enough camps and training centers in use or in recoverable condition to take care of their needs in that direction for quite a while.

Of course, there will be a lot of rehabilitation to do. But it won't be anything near the scale of the construction for War II.

There's one exception—steel. Steel mills today are said to be running as near to capacity as they can get. Most of Washington agrees there'll have to be an expansion there.

So—although the effect will be creeping—the planners see a very good possibility that the medium-sized contractor will lose heavily in staff and business. He won't have too many places to turn, he'll have to cut his organization. (For the contractors' views on this, see p 27).

There's no particular answer to this apparent in the planning—only a realization that it's more than possible.

• **Industry must be healthy**—The thing is more serious yet, from a purely war standpoint.

Because most planners agree that an essential to a strong defense is a well-equipped and healthy construction industry. If your cities are subject to attack, you have to have the equipment and the trained men to clear the damage quickly, get essential serv-

ices operating, maintain supply lines.

And the construction industry and its equipment is the agency that will in most cases be called upon to clean up any such messes.

• **Equipment** – Washington isn't, as yet, the place to look for statistics on availability of equipment. But its a subject for wary consideration, in the welter of talk about priorities on metal and machines.

For the moment, there's no plan—and not even talk—of allocations to manufacturers. As a matter of fact, there doesn't seem to be much immediate prospect of any heavy drains by the military—quite a bit of usable machinery left over from War II is available in storage at various points, perhaps enough for first needs.

There have been some reports, however, of what Washington at the moment chooses to call "prudent planning" on the part of contractors, stocking up on some items of machinery and equipment: Wire rope, small machines, reinforcing bars and mesh, and the like (See p 21).

And there's one other factor not discussed—but worth thinking about in this connection: Japan, for example, has some steel and machine-tool capacity available. It might be possible to use it to lessen the impact on the home industry, and incidentally, keep the Japanese at work.

That's the picture—in necessarily broad strokes. The detailed points, insofar as details can be obtained this early, are in accompanying stories.

Short-term power jobs to be pushed by U. S.

Agencies ordered to review work but will fight for anything connected with defense program

Government agencies have been asked by the President to review their programs and modify them to save materials and manpower. (see p 23). The agencies are making the required reviews, but they are frank to say that they will fight for every project that can be tied in any way to defense.

Power will be the major argument for many of these. Projects now under way that can put energy on the line within the next two or three years are sure to get priority.

In the Northwest, for example, McNary and Hungry Horse Dams will get every help to speed completion. Starting of Chief Joseph, on the other hand, will probably be postponed. Too much time would be required.

No definite plans on modified programs have been made by either the Army Engineers or the Bureau of Reclamation. USBR's top staff is exploring the possibilities this week at its annual programming conference.

Looking again at the Columbia River Basin, it is reasonable to assume that the irrigation project at Grand Coulee might be slowed down. But added effort will be made to speed installation of the remaining generators.

Also in the Northwest, the relatively small project at Albeni Falls probably would get a go-ahead, because storage there by 1952 could increase power output of downstream plants. The supplemental appropriation bill for this year—now before Congress—includes funds for Albeni Falls and also for the Engineers' big project at Ice Harbor, on the Snake River. Scheduled for power generation in the fall of '55, Ice Harbor might possibly be brought in by the end of '54.

Davis Dam power plant—under construction on the Colorado River—is certain to be pushed. Likewise, the Colorado-Big Thompson power project, on the east slope of the Rockies, presumably will get a priority.

On the upper Missouri River, Canyon Ferry Dam and power development would be eligible for extra push. Farther downstream, the big Army engineering jobs at Garrison and Fort Randall probably will be speeded, after careful study. With no manganese to be obtained this time from Russia, the government may want power to open up deposits in South Dakota.

Like other government agencies, Reclamation will not actually cut back its program until orders come down from above. California's Central Valley Project—now directed to irrigation development—might be suspended.

In the Southeast, the Army Engineers certainly will be called upon to speed the projects at Clark Hill and Buggs Island. Allatoona already is on the line. Large power demands are looked for in the Southwest. Bull Shoals and Fort Gibson Dams are due to get all the lift they can be given.

St. Lawrence River advocates will make use of the occasion to boost their power and Seaway scheme.

With the possible exception of Ice Harbor and Albeni Falls, no new starts are on the horizon for either the Corps of Engineers or the Bureau.

Steam plants now started likewise will be pushed. TVA will put pressure on completing the job at New Johnsonville, Tenn., and the more recent plant at Widow's Creek, Ala.

Large power and water requirements must be met at the site of the Atomic Energy Commission's new hydrogen bomb plant, for which $250 million will soon be voted by Congress. The AEC can say nothing of its program.

Hydrogen bomb development is one branch of government research that will expand rather than shrink.

. . . AND KEEP YOUR POWDER DRY

What can a contractor do now to get set for defense jobs that lie just ahead—Here are a few suggestions, some of them applicable to engineering firms as well.

1. Bring your performance record up to date at the Bureau of Contract information.

2. Gather the information you will have to give in order to get security clearance for personnel who may be employed on classified work.

3. Begin in-training programs to qualify men for more than one job—enable them to take over new duties as reserve officers and specialists are called up from your organization.

4. Looking to the future, small contractors can begin laying their lines to tie in with large firms that will get the overall contracts when the big jobs break.

Builders and agencies agree on war contracts

Contractors and government departments agreed last week that fixed-price contracts should be used for defense construction contracts wherever practicable—and for as long as possible—in the continental United States. Through its new committee on national defense, the Associated General Contractors of America recommended that procedure last Friday to government agencies.

The contractors' proposal was in close harmony with the thinking of the federal construction and procurement bureaus. Top-level officers and officials sat in at the meeting representing the Army Corps of Engineers, the Navy Bureau of Yards and Docks, the Air Force Materiel Branch, the Munitions Board, the Atomic Energy Commission, the Bureau of Public Roads, and the National Security Resources Board.

Contractors want no return of the recapture clause in cost-plus-fixed-fee contracts that allowed the government to take over machines and personnel in World War II. They want to keep their equipment and crews intact.

Conditions entirely different from 1940-42 make the fixed-price, competitive-bid contract generally feasible today. Government agencies want to use the fixed-price formula as long as conditions permit, use the fixed-fee contract only when forced to.

Under existing law, the President would have to declare a national emergency before negotiated, fixed-fee contracts could be employed on a broad scale. The law makes allowances, however, for exigencies under which contracts could be negotiated today.

CONSTRUCTION BUSINESS

July volume running above first half despite 10% decline in housing

Construction contract volume this month seems headed even higher than in the record first half of this year. July, 1950, contracts are going at double the rate of July, 1949.

July three-week total of ENR contracts is $922,649,000. This July average of $307,550,000 a week is 22% over the record rate of last month, 42% over the January-June rate, and 100% over July, 1949.

July housing projects contracted have dipped 10% under the January-June average to $65,465,000 a week. But this rate is still 150% over July, 1949.

And most other types of construction contracts are coming through in higher volume than the first half. July contract rate is higher than the June record even if you take out the $165,100,000 for two large pipeline contracts let this month.

July Contract Award Volume Compared to Jan.-June
(ave. wk. in millions)

	26 wks Jan.-June	3 wks July	% chge
Waterworks	$ 4.6	$ 3.5	−24
Sewerage	4.8	4.3	−12
Bridges	7.2	7.8	+8
Highways	23.7	30.2	+27
Earthwork, waterways	9.1	18.0	+98
Buildings:			
Public	31.8	32.5	+2
Housg., pub.	4.6	7.9	+72
Housg., priv.	73.1	65.7	−10
Industrial	22.2	27.7	+25
Commercial	17.7	24.1	+36
Unclassified	18.4	88.1	+379
Federal	27.6	35.4	+28
State & Mun.	65.9	79.2	+20
Total Public	93.5	114.5	+22
Total Private	124.4	192.9	+55
U. S. Total	217.9	307.6	+41

• **Public works gain**—All types of public works are running ahead of first-half volume except sewerage and waterworks. Highway construction, at $302,211,000 a week, is up 27%. And bridges, at $7,783,000 a week, are up 8%. Public buildings are about even with January-June.

Public housing began to get under way this month—up 72% from the first half to $7,931,000 a week now. But even this July rate comes to only $412 million a year. (About $1 billion a year was authorized.)

Earthworks and waterways this month also have turned up—to $18,040,000 a week—after an early-year slump.

• **Industrial-commercial boom**—Industrial buildings contracted so far in July average $27,717,000 a week, 25% higher than January-June. And 1950's first half was 15% over 1949.

Commercial building contracts are roaring along this month at $24,145,000 a week. This is 36% over the first half and 150% higher than July of last year.

• **Unclassified**—Unclassified construction took a huge jump this month. It is up 370% from the first-half rate if you count two big pipeline contracts ($48,100,000 let by Trunkline Gas Co. and $117,000,000 let by People's Gas, Light & Coke Co.). And even excluding these two projects, unclassified construction in July is up 70% over the January-June rate.

Building shut-down faces New York City

A strike of 1,100 truck drivers hauling sand, gravel and other building materials threatens to shut down New York City construction.

The walk-out began July 19 after teamster-union members (Local 282) rejected an employer offer of a 37½-cent raise to $2.37½-$2.55½ an hour, plus Blue Cross hospital insurance. The union negotiating committee had accepted this offer.

This strike comes just as a steamfitter strike also threatens to cause mass lay-offs in other trades next week.

Supplies going to contractors from 48 companies were stopped dead by the teamster strike.

Lumber dealers maintain stocks, raise sales 20%

Retail lumber dealers increased their sales 20% in May without drawing down their stocks, according to figures released by the National Retail Lumber Dealers Association.

End-of-May stocks of 5,138 million board feet are only 0.2% less than April stocks.

Compared with a year ago, May sales are up 41.5%, stocks up 5.6%.

Sales increased in all regions. Stocks were little changed except for a 7.1% gain on the Pacific Coast, a 6.1% decline in the East, South, Central, and a 5.4% decline in Middle Atlantic.

Capacity cement output

U. S. cement mills in May were operating at an average 90% of rated capacity, compared with the 86%-capacity rate of a year ago. This is close to practical ceiling operations.

June-July production is probably even higher, but most of the increase must come from mills shipping some distance out of surplus areas to regions of highest demand.

May output of 19,950,000 bbl was a record for the month—7% over a year ago.

Regions operating at over 100% of capacity are Michigan (103%) and the Mountain States (106%), according to the Bureau of Mines.

Production, plant outlay trend upward

Industrial production is going at the highest peacetime rate in history. And industry between April and June has stepped up its plant and equipment spending 22% over the first quarter.

In June the Index of Industrial Production hit 197 (Federal Reserve Board index, estimated by President's Council of Economic Advisors). This is 16% above a year ago. It compares with 193 in May and a previous peacetime high of 195 in November, 1948.

• **Plant outlays gain**—Because of the production rise, and helping it along, industry plant and equipment spending the second quarter was at an annual rate of $18,120 million. This is the same as the average rate for all of last year.

Plant construction and equipment spending will increase further in the present quarter, economists say.

Plywood prices up 5%; output at capacity

Yielding to continued heavy demand pressure, plywood firms raised prices an average of 5% last week. The strong demand has mills going at capacity.

This enables them to pass on rising costs of materials and labor—mostly higher log prices. If several mills start raising prices under these conditions, leaders usually must follow, although they wish to hold the price low.

Company officials figure the price of ¾-in. interior grade will settle around $92 a M sq ft—the new price announced by U. S. Plywood on Thursday.

• **Capacity output**—Line output is probably about 230 million ft—close to present mill capacity. Several new or modernized mills began producing in May. But the industry cannot grow as rapidly to meet the super-demand as can the lumber industry.

July output will be down considerably, due to vacation shut-downs.

May production of softwood plywood was 228,278,000 sq ft, according to Bureau of Census.

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 58, went to press.)

Gas Pipeline—Plantation Pipeline Co. will construct a $50,000,000 gas pipeline from Baton Rouge, La., to Charlotte, N. C., passing through Louisiana, Mississippi, Alabama, Georgia, South Carolina and North Carolina. Moscowitz, Willner & Millkey, Atlanta, Ga., are consulting engineers.

Power Equipment—Republic of El Salvador, San Salvador, will open bids Aug. 15 for generators and turbines for hydroelectric dam and power plant on Lempa River. Estimated cost is $15,000,000. Harza Engineering Co., Chicago, is engineer.

Dam—Utah Construction Co. was awarded contract to construct a rock fill dam and 1,094 ft. of a 14,000-ft. water tunnel for Pacific Gas and Electric Co.'s Bear River Development at the head of the Mokelumne River, Calif., for $11,000,000.

Housing—Raleigh, N. C. Housing Authority will ask bids, Aug. 22, on 6 buildings consisting of 64 apartments, community and nursery building in Chavis Heights, and 10 buildings with 86 apartments, maintenance and storage building in Halifax Court. W. H. Deitrick, Inc., is architect.

Motor Assembly Plant—H. K. Ferguson Co., Cleveland, O., will build the superstructure for Ford Motor Co.'s assembly plant at Brook Park Village for $10,000,000.

Plant—The Proctor & Gamble Co., Cincinnati, O., will soon let contract for plant office, garage, guard house and parking area in Colerain Twp., near Cincinnati. Estimated cost is $1,500,000. F. A. Fairbrother and Geo. H. Meihls, Detroit, are architects. Albert Kahn Associated Engineers and Architects, Detroit, are engineers.

New Jersey Turnpike—Four contracts for bridge substructures totalling $7,020,121 were awarded July 21 by the New Jersey Turnpike Authority, Trenton. The largest project, Contract 38, was let to Brann & Stuart Co., Philadelphia, Pa., at $4,648,393 for 18 bridge structures, construction of approaches and interchanges in Middlesex and Union Counties. Other contracts are Construction Service Co., Bound Brook, N. J. at $1,050,913; Napp-Grecco Co., Newark, at $772,563; Koppers Co., Inc., Baltimore, Md., at $537,953.

Military Housing—U. S. Engineers, Southwestern Div., Dallas, Tex., is requesting offers from sponsors to construct, finance and manage housing units at Fort Hood, Tex. Estimated cost is $4,544,000. U. S. Engineers will select architect for project.

Housing—Detroit, Mich., Housing Authority awarded contract for the Edward Jeffries Housing Project to Kuhne-Simmons Co., Detroit at $5,520,000. Smith, Hinchman & Grylls, Inc., Detroit, is architect.

Power Plant and Distribution System—City of Hamilton, O., plans to construct electric plant and distribution system to cost about $1,237,000. Emery, Marker & Emery, Toledo, are engineers.

Water System—Bd. of Public Works, Anderson, Ind., proposes municipal water system improvements consisting of new wells, 14" water line mains to industrial district, service mains, 1,500,000-gallon and 200,000-gallon capacity elevated steel tanks, to cost approximately $2,000,000. Chas W. Cole & Sons, South Bend, are consulting engrs.

Military Housing—Claude Y. Lindsay Co., and Anderson-Rowe, of San Francisco, Calif., have been selected as sponsors to construct, finance and manage housing project at Hamilton Air Force Base, Hamilton, Calif., to cost about $5,000,000. Sponsors will do own construction.

Dwellings—Wiley Roberts & Sons, Dallas, Tex., plans group dwellings to cost about $3,000,000, in Oak Cliff section of Dallas.

Highway & Bridges—The Pavia Co., Verona, Pa., was awarded the contract by Pennsylvania State Department for divided highway, 2 bridges, ramps and service roads in Pittsburgh for $2,520,936.

High School—Penker Construction Co., Cincinnati, O., will build a $5,382,192 high school, stadium and athletic field for Central High School for Cincinnati Board of Education. Hake & Hake, Cincinnati, are architects and Harry Balke, Cincinatti, is structural engineer.

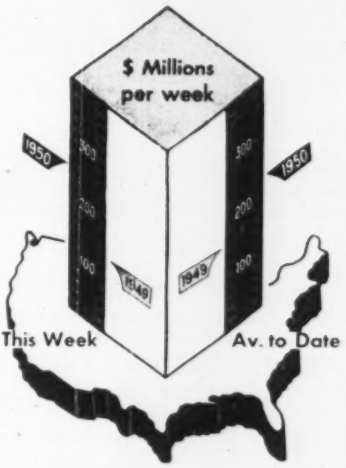
High School—Goode Construction Corp., Charlotte, N. C., won the contract for Lynchburg, Va., high school for about $2,000,000.

Vocational School—Bergen County, N. J., has approved $2,205,000 for the construction of a county vocation school in Hackensack.

COSTS AND VOLUME

ENR INDEX NUMERS

Index Base = 100		1913	1926
Construction Cost	July 20	511.91	246.07
Building Cost	July 20	326.90	203.74
Volume	June 30	427	187



Activity This Week

As reported to ENR (in millions of dollars)

Amount of contracts let

	Week of July 27 1950	Cumulative 1950 (30 wks.)	Cumulative 1949 (30 wks.)	% chge
Federal	$ 9.5	$831.5	$660.9	+26
State & Mun.	122.7	2,075.1	1,784.5	+16
Total Public	$132.2	$2,906.6	$2,445.4	+19
Total Private	120.3	3,933.6	2,114.0	+86
U. S. Total	$252.5	$6,840.2	$4,559.4	+50

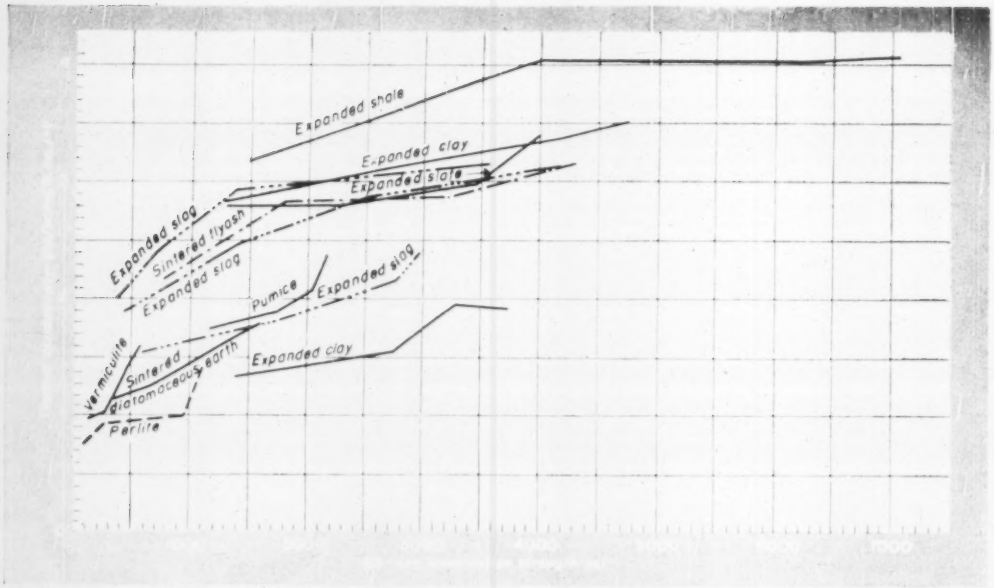
Contracts by type of work

	This Week	Cumulative 1950 (30 wks.)	Cumulative 1949 (30 wks.)	% chge
Waterworks	$2.5	$131.3	$95.1	+38
Sewerage	7.5	148.3	144.9	+2
Bridges	11.8	227.4	191.6	+18
Highways	46.9	755.3	522.3	+45
Earthwork, Waterways	5.0	295.4	350.6	−16
Buildings:				
Public	10.3	966.1	700.9	+38
Homes, pub.	12.9	153.9	249.1	−38
Homes, priv.	56.3	2,159.7	992.2	+118
Industrial	24.6	687.0	551.1	+25
Commercial	19.9	553.9	330.1	+68
Unclassified	23.6	762.1	432.4	+77

NOTE: Minimum size projects included are: Waterworks and waterway projects, $25,000; other public works, $50,000; industrial buildings, $65,000; other buildings, $250,000.

New capital for construction

	Cumulative 1950 (30 wks.)	Cumulative 1949 (30 wks.)	% chge
Corporate Securities	$1,295.9	$1,497.4	−13
State and Municipal			
Excl. housing	1,260.6	1,219.1	+3
Housing	436.5	408.2	+7
Total Capital	$2,998.3	$3,124.7	−4



TEST RESULTS show that thermal conductivity of a lightweight-aggregate concrete increase with strength. (ENR chart)

How to Use Lightweight Aggregates

By SELECTING one of the several types of lightweight aggregates now available you can make a concrete with as little as one-fifth the weight and one-tenth the thermal conductivity of stone concrete, but with low strength. Or you can make a high-strength concrete weighing one-third to two-thirds as much as stone concrete and with half the thermal conductivity.

These possibilities are indicated by data published by the Housing and Home Finance Agency in a pamphlet, "Lightweight Aggregate Concretes," (20 cents from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.). The data resulted from investigations carried out for HHFA by the National Bureau of Standards and the U. S. Bureau of Reclamation. Aggregates were of mineral origin, and nearly all are commercially available.

• **Various concretes tested**—In making the concretes, the NBS used the aggregates in the same gradings as furnished by producers. Vinsol resin, an air-entraining agent, was added to the mixes to improve workability, reduce the water requirement and prevent segregation and bleeding. The USBR tried to make workable concretes without an air-entraining agent where aggregates were of suitable gradings.

In both laboratories, trial batches were made to determine the best grading for each aggregate and to obtain mixes that conform reasonably to the prescribed cement contents of 3, 5, 7 and 9 sacks per cu yd of concrete. The NBS used a high-early strength portland cement and the USBR a normal portland cement.

• **Test results**—HHFA reports that there is little, if any, definite relationship between 28-day strength and thermal conductivity of concretes made with different aggregates. This is also indicated by the NBS test data plotted in the chart.

Tests showed, however, that thermal conductivities of the concretes made with any one aggregate increase with weights per unit volume, the relationship being nearly logarithmic. Also, compressive strengths appear to vary as the cubes of the densities. Consequently, a direct (almost linear) relation exists between strength and thermal conductivity of concretes made with any one aggregate.

• **How to use data**—Because of this relationship, it may be possible to design a lightweight concrete mix to meet both thermal and structural requirements. From a chart like the one above, but based on data obtained from various aggregate producers, select one or more aggregates that might be suitable. Then, determine the proper mix by making trial batches, or by obtaining the proportions from the producers of the aggregates.

For example, suppose you wanted a concrete with a 28-day compressive strength of 2,000 psi and a thermal conductivity of about 2. The chart indicates that you should be able to make it with pumice, expanded clay or expanded slag. (Thermal conductivities given are for oven-dry concrete; values in service would generally be higher, depending on the moisture content of the concrete.)

NBS engineers obtained such a concrete with one part cement to 3.7 parts pumice (room-dry weight 76 pcf). Interpolation of their data indicates that about the same result could also have been achieved with a 1:6 expanded-clay mix (room-dry weight 65 pcf) or a 1:5 expanded-slag mix (room-dry weight 80 pcf). Workability of these concretes would be good.

• **Handbooks needed**—For this type of design to become practical, however, the various aggregate producers would have to:

1. Determine and standardize on

the best gradations of the aggregate.

2. Determine the proportions of aggregate, cement, air entraining agent and water to be used to produce given strengths of concrete, and note the corresponding thermal conductivities.

3. Report the properties of each mix in handbook form.

Before deciding upon the aggregate to be used, you should compare the costs of the concretes made with each and determine whether the aggregates are economically available in quantities sufficient for the job. Costs of lightweight aggregates depend on type and locality. They may be higher than for sand, gravel and crushed stone because of smaller production, additional processing and longer haulage from source. For example, 14,500 cu yd of lightweight concrete were placed in the Prudential Building in Los Angeles, saving 9,800 tons of dead weight, but at a premium of $5 per cu yd (ENR March 31, 1949, p 41).

• **Absorption is high**—You should also give full consideration to the effect on your structure of shrinkage from drying, which is the most unfavorable physical property of lightweight aggregate concretes. Most lightweight aggregates showed relatively high water absorption in the NBS tests. Shrinkage of the concretes made with them was about two or more times that of dense aggregate concrete. The effect was most pronounced with aggregates requiring high cement contents for strengths of 2,000 psi or less.

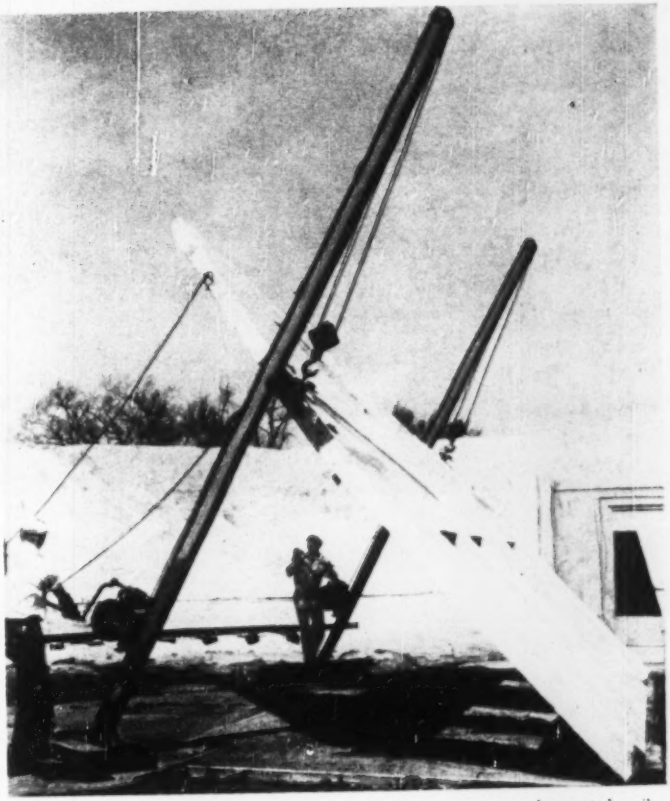
Absorption also controls to a large degree the amount of water needed for mixing, and may be several times that required for stone or gravel concretes. In addition, standard techniques for mixing may have to be modified because of the friable or crushable nature of some of the aggregates. In extreme cases, you might find it expedient to use a special mixer that will not break down the larger particles.

• **Other properties**—You can expect concretes with 28-day compressive strengths over 1,000 psi to have relatively high resistance to freezing and thawing. But even for concretes with relatively low strengths and densities, you can develop high resistance with entrained air, which is a desirable element anyway for other reasons.

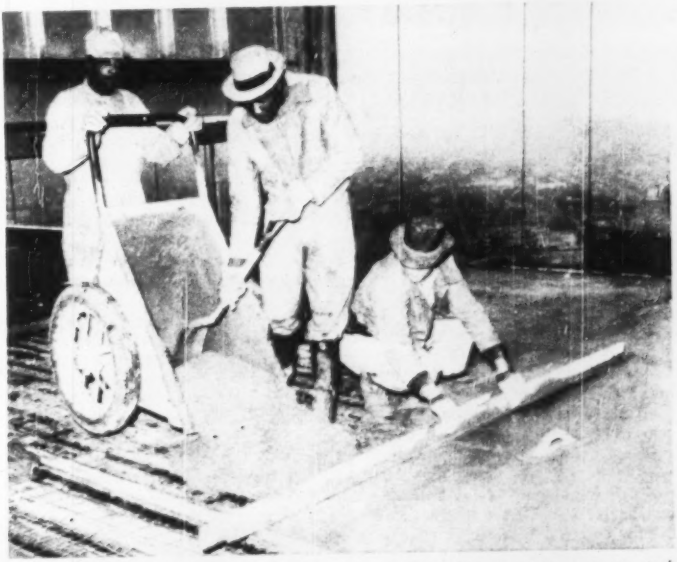
Another factor to be taken into account is the deflection of beams and slabs made with lightweight concretes, since they have a low modulus of elasticity. The elastic modulus is influenced to a great extent by the type of aggregate and the cement content.

The aggregates whose properties are plotted in the chart include:

Expanded clays and shales—which



TILT-UP CONCRETE WALL made with vermiculite aggregate can be erected easily because of its light weight. Zonolite Co. photo.



LIGHTWEIGHT FLOOR made of concrete with perlite aggregate cast on steel decking cut dead weight for Houston office building. Great Lakes Carbon Corp. photo.

are made from excavated material crushed to pass a ¼ to 1-in. screen. Fed to a rotary kiln, where it is heated close to its fusion point, this material softens and coalesces to the consistency of chewing gum. Trapped gases give it a cellular structure, like yeast in baking dough, increasing the volume about 50%. Discharged from the kiln and cooled, it is then crushed to various sizes, weighing from 40 to 60 pcf.

Expanded slags—which are produced by treating molten blast furnace slag with controlled quantities of water or steam. Aggregates weigh from 40 to 60 pcf.

Pumice—a cellular glassy lava—which looks like a glassy froth, with innumerable elongated and parallel cavities. Screened aggregate weighs from 28 to 38 pcf. The USBR also tested pumicite, which is similar in chemical composition but different in physical properties, manner of formation and mode of occurrence. **Pumicite** is an accumulation of finely divided glass-like particles blown from volcanoes; it may be loose and unconsolidated or cemented together. It is also called volcanic ash, volcanic dust, tuff or tufa.

Diatomite—in the pure state—which is composed of deposits of siliceous shells of microscopic aquatic plants known as diatoms. It weighs about 20 to 30 pcf, but admixtures of clay, sand and gravel greatly increase its weight.

Perlite—which is one of the natural volcanic glasses, related in origin to pumice. It expands greatly when heated and may weigh from 40 to 16 pcf.

Vermiculite—a micaceous material—which occurs naturally in several varieties as a result of the action of heat and water on the minerals biotite and phlogopite mica. When heated, it expands to as much as 30 times the original volume. Dried, ground ore is subjected to 1,800° F for 4 to 8 sec, after which it weighs only 6 to 8 pcf.

Additional information on properties of lightweight aggregates may also be obtained from the Bureau of Mines, Department of the Interior, College Park, Md., and from the papers "Lightweight-Aggregate Concrete," by R. W. Kluge, M. M. Sparks and E. C. Tuma, JOURNAL of the American Concrete Institute, May, 1949, and "Tests of Lightweight-Aggregate Concrete Designed for Monolithic Construction," by W. H. Price and W. A. Cordon, JOURNAL of the ACI, April, 1949.

Notes on Legal Decisions

Summaries of decisions relating to construction prepared by I. Vernon Werbin, counselor at law and engineer, New York, author of Legal Phases of Construction Contracts (McGraw-Hill)

Construction of Contracts

The cardinal rule in the interpretation of contracts is to ascertain the intention of the parties thereto, as expressed therein, and to give effect to the same, if it can be done consistently with legal principles. In arriving at the intention of the parties to a contract, the language used therein, if it is clear and explicit, and does not involve an absurdity, governs in the interpretation of the instrument. The whole instrument should be read together, giving to the words and terms thereof their ordinary and accepted meaning, and, if possible, every part thereof should be made effective, each clause helping to interpret the others.

A person claiming that a contract modifies a prior one must show that the latter contract is definite and certain as to the terms of the modification, and the modification extends only so far as the terms are definite, certain and intentional.[1]

Where several writings are made as part of one transaction, relating to the same subject matter, they may be read together as one instrument, and the recitals in one may be explained, amplified, or limited by reference to the other.[2]

Where general words are used in a contract after specific terms, the general words will be limited in their meaning or restricted to things of like kind and nature to those specified.[3]

In construing a written contract, the language used by the parties must be given its ordinary significance, as far as is possible. The circumstances surrounding the making of the agreement and the purpose sought to be accomplished thereby are entitled to consideration in arriving at the actual intent of the parties. It must be assumed that the parties meant what they said, and in the absence of any claim to the contrary, that they understood the nature of the obligations assumed by each as expressed in the writing. The various provisions of the undertaking must be construed together and force and effect given to each.

The intention of the parties must be deduced from the entire agreement and not from parts thereof, and where a contract has several stipulations, the intention of the contracting parties is not expressed by any single clause or stipulation, but by every part and provision in it, which must be considered together, and so construed as to be consistent with every other part of the agreement.[4]

(1) Poindexter v. Jones, 211 P. 2d 283.
(2) Sellossian v. Inc. v. Radcliffe, 70 2d 493.
(3) Hoeltje v. Francess, 56 S.E. 2d 865.
(4) Johnston v. Miller, 46 S.W. 2d 770.

Minimizing Damages

"One who is injured by the wrongful or negligent acts of another, whether as the result of a tort or of a breach of contract, is bound to exercise reasonable care and diligence to avoid loss or to minimize or lessen the resulting damage, and to the extent that his damages are the result of his active and unreasonable enhancement thereof or are due to his failure to exercise such care and diligence, he cannot recover; or, as the rule is sometimes stated, he is bound to protect himself if he can do so with reasonable exertion or at a trifling expense, and can recover from the delinquent party only such damages as he could not with reasonable effort, have avoided."[1]

The court, in its opinion, quoting from another case,[2] stated: "The law imposes upon every one engaged in the performance of a contract the duty of doing everything in his power to prevent loss to himself from a breach of the contract by the other party. If he cannot prevent it altogether, he must make reasonable exertions to render it as light as possible, and if, by his own negligence or willfulness he allows damages to be unnecessarily enhanced, the increased cost must fall upon him."[3]

(1) Richter v. Walker, 213 P. 2d 53, [quoting from 15 Am. Jur. 2d 426-427].
(2) Wilson v. Sierra Lumber Co., 68 Cal. 61, 65, 49 P. 922, 923.
(3) Hamilton v. McPherson, 28 N.Y. 72.

Defects in Plans

The owner is entitled to recover damages from an architect who was also the contractor who erected the building, resulting from defective plans prepared by him and for defective construction work done under his supervision and for alleged fraud and misrepresentation in respect to the cost of the proposed structure.[1]

(1) Goldberg et al. v. Underhill, 212 P. 2d 516, [District Court of Appeal of Cal., Jan 25, 1950].

Houston's Boom is a Steady Roar

- **What public and private agencies are doing to cope with constant growth**
- **How the construction industry keeps up with the demand for new work**

Robert H. Dodds
Associate Editor, Engineering News-Record

ON JANUARY FIRST, Texas' biggest city did something that should have driven its municipal engineers into a frenzy. Houston annexed 79 sq mi to bring its corporate area up to 153 sq mi. A 20 percent population increase came with 105 percent area increase.

Instead of tearing their hair, the engineers welcomed annexation. It would give them a chance to catch up with other constructors, who had not been restricted by boundaries.

These other construction men had been going along with Houston's so-called boom for 20 years; they had pushed factories, houses, power and telephone lines in all directions beyond the city's late lawful limits. And they had done it so consistently that they could point to the record and say that the widely-reputed "boom" was really a "steady roar."

The most obvious record of Houston's steady growth is the 1930-1950 population curve. But it can be matched by a charting of annual building permit volume, with a $100 million year in 1948 as a peak. Such permits, of course, do not cover public and non-building construction nor any construction outside city limits. In this connection, last year's city building permits totaled $82,000,000, but a special survey reveals that total 1949 contract awards in the Houston metropolitan area amounted to $227,000,000.

Building construction of all kinds bulked heavily in the 1949 volume, creating ever-new demands for transportation, sanitary, power and communication facilities.

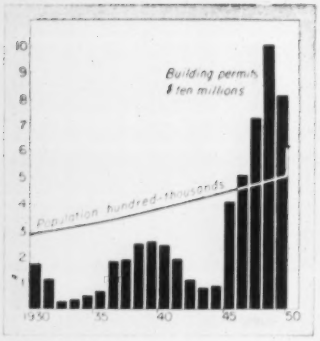
Fortunately, the construction industry is geared to add a full measure of these service works. And the money usually is available to pay for the construction. Public and private money sources alike have the faith that has inspired Houston's growth.

• **Power and telephone**—Private utilities, operating without city-limit restrictions, have expanded their services as rapidly as possible since war controls were lifted.

As a result of more than doubled plant expansion, electric service for new and anticipated homes and industries is adequate throughout the city's 153 square miles.

The Houston Lighting & Power Co. will spend $19,000,000 in the area this year, to bring total power capacity to 575,000 kw. Jan. 1, 1946 capacity was 252,000 kw.

The Southwestern Bell Telephone Co., suiting its policy to Houston's true growth, is in the midst of the



TWENTY YEARS of Houston growth—Building permits reflect depression and war; population increase rate is steady, affected only by annexation Jan. 1 this year.

largest telephone expansion program for a city of Houston's rank: $21,000,000 is being spent between January, 1950 and March, 1951. By next Spring, one- and two-party lines will be available to all subscribers in the city.

"Houston was laid out to be a big city," one booster says, lending historical depth to the city's characteristic optimism. (And certainly the city could be accused of making no small plans when in 1915 it dug the Houston Ship Channel to bring ocean-going ships 50 miles inland.)

• **No zoning**—About the only phase of planning that seems to be neglected consistently is zoning.

Houston has none, despite frequent efforts to put through zoning laws.

W. S. Bellows, contractor and civic leader, is one who has taken active part in moves to right the situation. With unconcealed civic embarrassment he says Houston is the only U. S. city over 150,000 without zoning. One result of non-zoning can't be missed by the visitor. It's right on Main Street—a 40 x 100 ft Quonset hut auto laundry alongside one of the city's finest churches.

Regardless of the zoning blind spot, enlightened engineering practices predominate in City Hall and in contractors' and engineers' offices.

• **Traffic control**—An example is found in city traffic engineering, administered by former Yale professor Tom Willier. Houston's intercity movement of persons and goods is by motor vehicle. (Harris County vehicle registrations have increased from 115,000 to 276,000 since 1935.) Much of this traffic moves through the central business area. Downtown streets are broad, but traffic is so heavy that several two-way streets used to be choked at least twice daily. Now, most cross-town streets have been made one-way, as have several north-south streets parallel to Main Street. Curb parking has been restricted, and many parking lots and garages have been established.

As a result of these other measures, traffic moves efficiently and safely, even in rush hours.

Mr. Willier asserts that the eased downtown traffic condition already has stemmed undesirable commercial decentralization. Because vehicles move easily in this section, businesses are not impelled to seek better accessibility in outlying areas, creating the blight spots that exist in many traffic-choked cities as they went. Although there are several "planned" community business districts in Houston, they supplement rather than draw from the central business district.

One-way traffic downtown is but one part of a coordinated traffic and parking control plan. The one-way street system has been extended from the downtown area to outlying regions. Notable among the one-way street systems is a four-street feeder connection to the Gulf Freeway (ENR Mar. 23, p 108), a limited-access six-lane commercial route designed to carry 75,000 vehicles per day.

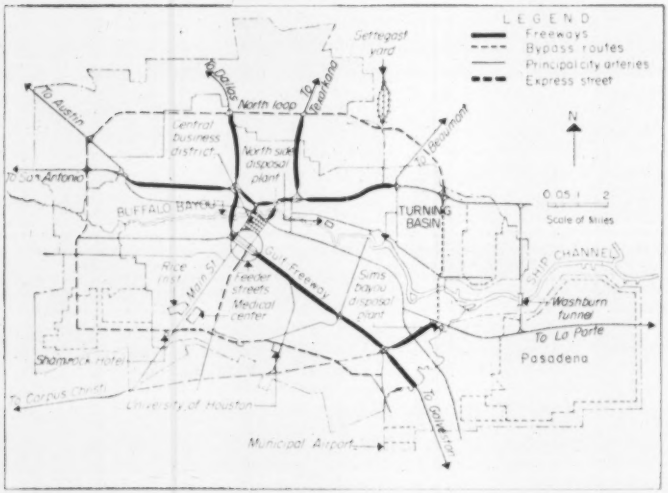
WHAT'S HAPPENING IN HOUSTON

- Population-increase: 35% since World War II
- Area-increase: 105% on Jan. 1, 1950
- Building-permit average: $76,000,000, 1946-49
- Electric-service increase: 125%, 1946-50
- Vehicle-registration increase: 140%, since 1935
- Freeways: 4½ mi built, 23½ mi to go
- Underwater tunnels: one complete, another on way
- Railroad project: a $3,000,000 freight yard
- Seaport projects: two piers, $10,000,000 channel work
- Airport projects: new terminal; 50% more area
- Sewage treatment capacity: doubled in two years
- Well-water supply: twice the demand by fall
- Surface-water project may outstrip well-water supply
- All big steel-frame buildings have welded connections
- Construction labor good, material supply fair, know-how excellent

Transportation Projects

Moving persons and goods involves a lot more than "making the most of what they have" in Houston. Such measures at best are effective stopgaps. Caring for ever-increasing transport demand involves construction of more expressways, new railroad yards, greater seaport capacity and extended airport facilities.

The Gulf Freeway, which already



FREEWAY SYSTEM proposed for Houston; 4½ miles of Gulf Freeway already in use, carrying 90% capacity. Lesser traffic routes also shown, as are a few other facilities mentioned in this article. Territory annexed this year is shaded.

handles 65,000 vehicles daily, is the first part of a 28-mi expressway system that will include five routes from the center. (The central artery shown on the map has not been authorized, so it is not included in the 28 mi.)

These projects are handled jointly by the city and the State of Texas. Both parties determine the location, then the city provides right-of-way and the state performs construction, by contract, with federal aid. State highway department employee W. J. Van London is engineer-manager of Houston urban expressways. He says that the whole program will take twenty years at the present rate of financing and cost $45,000,000 for construction, plus $15,000,000 to $20,000,000 for rights-of-way.

Minimum taking width is 300 ft, paradoxically, acquisition is in some cases being hastened by property owners who seek to build in the planned right-of-way. The owner's building-permit application is denied, but at the end of a year, by law the city must either issue the permit or buy the property. It buys the property. So far the city has spent a half-million dollars on purchases forced in this manner.

Two other construction projects will have an effect on Houston's traffic (and growth). The more important for the city itself is Washburn Tunnel, under the Ship Channel at suburban Pasadena. (ENR June 8, p. 32) Opened in May, this tunnel gives better access to sections north-east of the city, where expansion has been limited, and primarily industrial. The second project, also a tunnel, will connect LaPorte with Bartown, where the Ship Channel meets Galveston Bay. This tunnel will divert through coastwise traffic from Houston.

Houston also is building a scenic parkway—Buffalo Drive. Running westward from the city hall area along Buffalo Bayou (downstream, the enlarged bayou is the Ship Channel), this route has three separated three-lane roadways: One two-way for local service; two one-way, for express traffic.

• Railroads build yards—As a matter of course, Houston's ever-increasing activity has demanded enlarged rail freight facilities. Since 1926, rail tonnage has increased from 6.4 million to 14.8 million. The Missouri-Kansas-Texas is talking of a big new freight terminal, already having spent $1,200,000 on facilities since the war; the Southern Pacific is enlarging its Englewood yard facilities and the Missouri Pacific now is putting its new $3,000,000 Settegast yard into operation.

• More piers for ocean freight—Water freight tonnage, too, continues to increase. The 1926 tonnage was 10.5 million; 1949 was 37.6 million—5,734 ship movements yielded the 1949 figure. For several years Houston has handled the third largest volume among U.S. ports, and last year the city was second.

With the aid of construction projects now under way, the port intends to hold onto second place. Public seaport work is conducted by the Houston Navigation District (Gen. W. F. Heavey, port director), operator of 14 piers, a grain elevator and other facilities. Industries also own wharfage. Currently the District is in the midst of a $31,000,000 improvement program, including a $10,000,000 project to widen the ship channel by 100 ft. to a 500-ft average width, and deepen it 2 ft. to 36 ft. The U.S. Engineers are participating in this program. Channel enlargement will result in improved ship traffic and control.

• Wharves are unusual—Two marginal wharves, one completed recently and the other now under construction, comprise the initial step in the Navigation District's current improvement program.

The new wharves are of unusual engineering interest, being founded on cells of steel sheetpiling that extend to more than 70 ft below the apron and are filled with compacted selected materials. Lockwood & Andrews, Houston consulting engineers who designed the wharves, say the cellular construction feature alone saved $405,000 (based on competitive bids with the type formerly used in the area) on covered Wharf No. 9, which has been completed at a cost slightly less than $2,000,000. This wharf is at the head of the turning basin. A second wharf of somewhat similar design but without a shed, is now under construction. It is estimated that the Navigation District will save $500,000 on this wharf, which will cost $1,000,000.

• City tackles airport problem—The next transport-construction category is airports. Houston's airport claims to handle the sixth heaviest traffic load in the United States—at present out of a terminal building that is far from adequate. The field itself is roughly

SETTEGAST YARD—After two years' work, this freight yard now is ready for use by Missouri Pacific and other roads. It includes 53 tracks, 36-car freight house, 64-car ice dock, and shops for cars and diesel locomotives. Standing capacity is 2,320 cars.

4000 x 5000 ft. This year the city is occupying a 2000 x 5000-ft strip at the north side, putting the initial elements of a terminal building and two finger buildings, an apron with plane services, and an enlarged drainage system under construction there. Cost of improvements built this year will be about $4,000,000. In charge of airport construction is T. L. Smith, III, assistant director of public works. Director of public works is J. M. Nagle.

Sewage and Water Works

One city public works department activity that feels annexation keenly is sewerage and sewage disposal.

Need for complete waste treatment is emphasized by the fact that 50 to 70% of the Ship Channel's normal flow is treatment plant effluent and waste water from other sources. Chief Design Engineer William E. White says the city had just about fulfilled sanitary standards when the new territory was added. Now it must broaden its sewer construction program. In the meantime the city will administer thirteen small disposal plants until their gathering systems can be tied into trunk sewers leading to two main plants. (One large annexed area, containing 65,000 people, has no centralized treatment facilities).

Sewer tie-in will be orderly because the present system was designed with annexation in mind. Sewer construction has proceeded at a steady rate, based on two bond issue authorizations (voted in 1944 and 1946) totaling $17,400,000. Of this amount $12,000,000 has been used, providing full sewerage for annexed areas will require an additional bond issue.

• Sewage treatment adequate—Until most of the annexation terms are complete, present sewage treatment capacity is not expected to be exceeded (see chart). Since 1947, treatment capacity has increased from 25 mgd to 51 mgd. This increase was effected by: 1. construction of the $1,500,000 Sims Bayou activated-sludge plant (20 mgd) opened in June 1948; 2. the building this year of a $700,000 addition of 12 mgd capacity to the North Side activated-sludge plant, and; 3. removal from service of the 6-mgd South Side plant.

A significant increase in treatment-plant load occurred last year when five meat packers began pre-treating their own highly-concentrated waste (0.5 mgd) and delivering it to the city's sewers. (Previously, this waste was discharged, untreated, into the Ship Channel). By state law, industries treat their wastes. However, enforcement is not yet complete, so industrial pollution exists in the Ship Channel and its tributaries.

Nearing completion is a municipal sludge-drying plant whose product will be marketed for local agricultural fertilizer requirements, serving to improve the overall degree of sewage treatment. Engineering analysis (ENR Apr. 15, 1948, p. 77) for this plant anticipated a quarter-million dollars annual revenue, which may equal operating costs and fixed charges.

• Separate sewers used—Storm drainage is another matter, handled in a separate system. Houston's flat terrain makes it impossible to design storm sewerage for maximum-intensity rainfall, but a continuous sewer construction program eventually will prevent serious temporary inundation throughout the corporate area. (One big sewer job was described in ENR June 23, 1949, p. 49). At present, 45% of the pre-1950 area of 74 square miles is adequately drained. Meanwhile, local interests are advocating a watershed flood-control project that would divert upland flow from Buffalo Bayou and around Houston. (ENR Aug. 26, 1948, p. 8.)

• Surface water to be developed—Turning to water, present adequate supplies—both public and private—come from wells, but surface water sources are going to be developed. Because the pumpage rate has increased three times as fast as the population, Houstonians foresee a limit to the underground source. Mason G. Lockwood, consulting engineer, cites examples of water-poverty amid plenty along the Gulf Coast. Groundwater is pumped while abundant river flows go unused to the sea.

Under F. N. Baldwin, Houston's water department is looking far ahead with an eye to both domestic and industrial expansion.

Land has been acquired for a dam and reservoir site on the San Jacinto River 30 miles northeast of Houston; $22,000,000 water revenue bonds will be referred to the electorate soon, to finance the surface-water project. If the issue passes, work should begin this fall, for completion in 1952.

A safe yield of 150 mgd will be impounded by an earth dam. Water will be pumped into an existing canal (present use: raw water for industries) and conducted to a treatment works on the Ship Channel's left bank across from Pasadena. Initial treatment capacity will be 50 mgd, with provision for expansion to 75 mgd. The remaining 75 mgd will be available, raw, to industries on the channel.

Domestic supplies now come from 2,000-ft wells that yield about 3 mgd apiece. Current average daily demand is 61 mgd—about 110 gpd per capita. Six or seven years ago the demand exceeded the supply, forcing many private users to establish their own well supplies (air conditioning is a big water user in Houston). A postwar drive to increase the supply will terminate this fall when 15 new wells are brought in, to increase the safe yield to 150 mgd. By now most of the small private wells have been suspended in favor of cheaper service by the city's water utility.

Water-main construction since the war has amounted to $2,000,000 half of which was paid by developers of new residential and business areas.

Building Construction

Several buildings under construction in downtown Houston invite the construction man's attention to the fact that welded connections prevail in Houston's steel-frame construction.

A leading Houston engineer-consultant in welded multi-story design is Robert J. Cummins, who says that

SEWAGE TREATMENT in Houston—Construction of treatment works has caught up with the flow only once in 20 years, but with capacity to be completed in 1950, treatment will be adequate until sewers in annexed areas are connected to plants.

all postwar big steel-building frames are welded. The city's leading steel-erection contractor, Peterson Bros., has helped develop welding know-how among the steel erection crews.

Changeover from riveting procedures was simple, because the preliminary steps of framing with bolts and truing with guys were similar to those steps in riveted construction. Welding merely was substituted for riveting—and welding has been familiar for a long time to Texas workmen, many of them trained on oil tank, pipeline and refinery jobs.

• **Welders busy**—The postwar building permit figures indicate how busy welders and other building construction men have been lately. (This year's permit volume through April is $45,000,000, about twice that for 1949, when the city was half as large in area.)

In outlying districts, perhaps the most famous new structure is the Shamrock Hotel—an epitome of elegance, built in the "spare no expense" tradition of the old western gold and silver days. Nearby, the Prudential Life Insurance Company soon will build an 18-story $6,000,000 headquarters for activity in seven states. Somewhat nearer, a medical center for which there appears to be no limit of funds (at least $100,000,000) is under way. Three hospital, administrative or research buildings are complete, three more are under construction, and sponsors are being approved for additional units.

Eastward, the University of Houston is in the midst of a $10,000,000 building program. And new community developments make the news regularly. One of the latest is $14,000,000 Meadowcreek Village, a 1500-house project near the ship-channel industrial district. Industrial expansion along the Ship Channel has receded lately, but a new burst seems due.

Downtown, the newest building—Sakowitz Department Store—has a welded frame, as a matter of course. And foundation walls embody a new technique that is adapted admirably to typical Houston subsurface conditions.

For basement-wall work the contractor, after boring semi-circular holes at short intervals along the basement-wall line, installed reinforcing and concrete and used the "piles" so formed to hold the bank during excavation. The piles later became part of the wall itself. (ENR, June 8, 1950, p. 46).

This method, a modification of local bored-foundation-pier practice, takes advantage of Houston's Beaumont clay subsoil. The clay cuts easily and stands unbraced for a reasonable time without shear or plastic flow. It affords satisfactory foundation for most structures.

Houston Construction Factors

A few examples of Houston construction ingenuity have been given, indicating an abundance of engineered construction know-how.

Houston is an outstanding center of one type of engineering knowledge—gas pipelines. Two of the nation's largest pipeline companies have their headquarters in the city—These are Tennessee Gas Transmission Co. and Transcontinental Gas Pipeline Co. Fish Constructors, a subsidiary of Fish Engineering Co., is designing and building the 1,840-mi Rio Grande Valley New York line (ENR Mar. 23, p. 118); will turn over to Transcontinental the completed facility and a ready-made work force.] At least one more line, Texas Eastern—the wartime "Big Inch"—is owned in Houston. (Gas is the principal fuel; practically no coal is used.)

• **Plenty of Contractors**—Capacity to handle great construction volume also exists. The Houston Chapter, AGC, directory lists 91 general-contractor members and 559 associate members (suppliers, specialist contractors). The Houston classified telephone directory lists 210 general contractors. Although several nation-wide contractors have Houston offices, most of the in-town work is done by Houston contractors. Included among these, of course, are Houston organizations that work on a nationwide (and worldwide) basis. Construction labor is good and plentiful. Thanks to a stabilization agreement the labor situation is peaceful (ENR June 15, p. 124).

• **Material supply**—Right now, some materials are getting scarce. The total capacity of three local cement mills is 16,000 bbl daily. This would be enough for local requirements, but a plant at San Antonio has been shut down, so an abnormal amount of Houston's cement has been leaving the area. For builders, there is a definite shortage of oak flooring and gypsum board.

Oyster shell, from immense banks in Galveston Bay, is used in the cement manufacture. Shell also figures as a concrete aggregate. Good bank gravel comes from Columbus, 80 mi away, and a good supply of brick is baked within a 20-mi radius of Houston.

A traditional and plentiful lumber source is East Texas (short-leaf yellow pine), but there is a heavy demand for fir dimension lumber from the West Coast. The current nation-wide shortage of West Coast fir, coupled with a local transportation situation, makes satisfaction of Houston's fir demand impossible for the time being. Almost all fir comes in by rail, cheaper ocean transport being curtailed by the fact that there is no full-fledged lumber storage facility at the port of Houston. (However, lumber ships may and occasionally do unload at Navigation District wharves.)

Steel supply is good. In fact, a recent development has improved the long-run steel prospect in Texas: A. O. Smith, of Milwaukee, in cooperation with Sheffield Steel Corp., will begin production shortly in a new $5,000,000 pipe plant for supplying Texas' oil and gas industry.

Sheffield Steel has the one integrated steel-mill operation in the area. Located on the ship channel, this mill processes ore through to finished products. Ore comes from East Texas and Mexico. Coking coal (only coal used in Houston area) comes from Oklahoma and Arkansas.

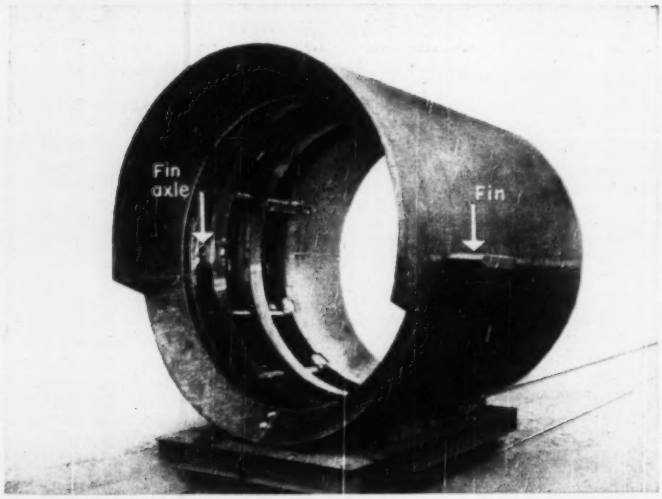
The remaining essential to a construction economy—machinery—now is well supplied by the nation's manufacturers. There seems to be a greater tendency to contractor ownership of equipment in Houston than there is in some large cities, but this may be an after-symptom of the general anxiety to secure machines for use during the early postwar shortage.

MACHINES, MATERIALS AND KNOW-HOW FOR HOUSTON CONSTRUCTION.*

Architects	112	Material Suppliers	
		Aggregate	13
Construction Machinery		Concrete	10
Heavy—rental	19	Lumber	19
Heavy—sales	19	Steel	20
Consulting Engineers		Specialty Contractors	
Chemical	5	Electrical	33
Civil	27	Heating	32
Electrical	17	Painting	23
Mechanical	18	Plumbing	25
		Roofing	16
General Contractors	91	Waterproofing	24

* A partial summary of construction services, from Houston Chapter, A.G.C., Directory.

Fins Guide Tunnel Shield Through Mud



TUNNEL SHIELD facilitated excavation through oozing mud. Fins on the side prevented spiraling and otherwise guided the shield. Only time entire shield could be photographed was in manufacturer's yard in partially complete condition.

ADJUSTABLE FINS on the outside of a tunnel shield guided its progress through oozing mud on a California sewer line just completed. Primary function of the fins was to prevent spiraling of the shield as it was jacked through the mud. These outriggers also proved valuable in maintaining vertical alignment.

The job is the north interceptor for Special District No. 1 of the East Bay Municipal Utility District (ENR Sept. 15, 1949, p. 38), skirting the east shore of San Francisco Bay. The tunnel shield was used to excavate an 8-ft 6-in. bore under what once was a ship channel penetrating the shore line. This channel was filled in years ago and the interceptor was chanted through the soft, fluid mud at the bottom of the old channel. The liquid nature of the material made a tunnel shield a must for this work.

Unpreventable inaccuracies in jacking tunnel shields for alignment frequently have twisted them in their progress through soft material. To remedy this, standard practice has been to place a timber at an angle into the mud ahead of the shield, with one end lodged against the shield's cutting edge. Then as the assembly is inched forward, it rides up on the timber and so returns to its original alignment.

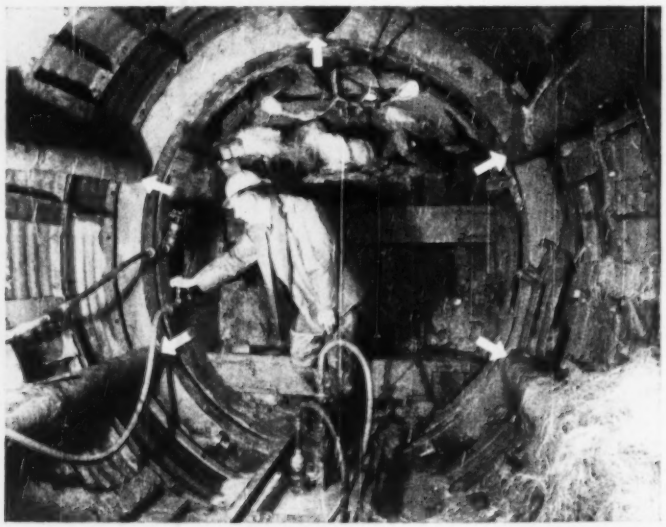
• **Fins needed in soft mud**—But on this job it was anticipated that the extremely soft nature of the material to be tunneled would not permit such procedure—the mud was expected to enter the shield and prevent access for thrusting a timber ahead. So the adjustable fins were adopted.

The soft material proved an advantage since the fins could be used with little or no fear of striking rock or other foreign objects that would snag the entire rig. (The contractors planned to cut the fins loose from the inside should they snag, but that wasn't necessary.)

Two fins extend out 9 in. from the shield—located at the spring line on each side. Each fin is 20 in. long and 3 in. thick with a tapered cutting edge at the front.

A 3-in.-dia axle connects the fin to a foot-long lever arm on the inside of the shield. Set screws permit movement of the lever arm to vary the angle of the fin from horizontal. Thus controlled, the fins serve as an aid in steering the shield.

In practice it was found that the leading edge of the shield could be raised or lowered quicker by use of the fins than by the standard method of jacking against the top or the bottom of the shield. Further, by allowing one fin to remain in a horizontal posi-



WORKMAN OPERATES VALVE on shield hydraulic system. Note two breast boards slide-bolted in place. Set screw for varying pitch of fin can be seen just above workman's right elbow. Telescoping pipes (shown by arrows) take the jacking thrust and distribute it over the liner plates.

ELECTRICALLY OPERATED two-cylinder pump that developed 10,000 psi for shield hydraulic system was located in skid shed on the surface. Maurice R. McClure, designer of the shield, is shown with the pump.

tion and varying the angle of the other from the horizontal, quicker realignment of the shield was possible—the shield reacted more readily to a turning effort.

• **Jacks push shield**—The shield was forced ahead by eight 50-ton, double-acting hydraulic jacks. Three of these jacks were situated in the top half of the assembly and five in the bottom half. This was necessary to overcome the tendency of such shields to nose down due to mud pressure at the top.

A master control valve introduced hydraulic pressure to all eight jacks simultaneously. However, each jack was equipped with two individual control valves: One to cut off flow to the jack and hold it under pressure, the other to regulate which way the jack would go.

The jacks were 4-in. dia by 36-in. stroke, operating at 8,000 psi. Pressure was developed by a twin-cylinder, 10,000-psi, hydraulic pump powered by a 7½-hp electric motor. Pump and jacks were connected by a double-extra-strong pipeline with wire-braided, rubber hose connections.

The upper part of the leading edge of the shield extends out 1 ft farther than the lower part, to retard intrusion of soft material from above. The cutting edge is made of ¾-in. plate on the outside and 1-in. plate on the inside. On the upper portion a 2-in. plate extends 2½ in. out from the V made by the other plates. A hard facing coats the end of this plate to make a wear-resistant cutting edge.

• **Breast boards hold back mud**—Slots are provided in the tunnel shield for breast boards to keep out the soft mud. There are nine breast board stations, each succeeding one being behind and below the preceding one so they stair-step down from the arch of the tunnel to the invert.

After the shield has been jacked forward, boards are taken out one at a time and the material mucked. Occasionally when the first breast board was removed, fluid material flowed several feet into the tunnel.

The tunnel is lined with bolted, corrugated, liner plates 16 in. wide. These are of too light a gage to jack against, so five thrust pipes—telescoping 5- and 6-in. pipes that can be collapsed to 16 ft or extended to 32 ft—are provided. Four thrust blocks, or lugs, on each pipe are attached to four separate tunnel liner-plate joints to distribute the load.

Since the tunnel is at a slight grade, a level device was built into the shield. By observing longitudinal and horizontal level bubbles it was readily seen whether or not the shield was running true and at proper grade. When the shield got off grade, it was brought back by manipulating the fins and by jacking with either top or bottom jacks. This unbalanced jacking turned the shield. The same system was used in steering the shield if it got off line.

A mucking machine loaded spoil into tram cars for hauling out of the tunnel. Progress by use of the shield was significanttly greater than in other parts of the sewer tunnel where ordinary methods were used. On completion of the job, the shield was left buried in the mud as it had no further use on the job.

The shield excavated an 8½-ft dia bore. Inside this bore was installed 66-in. ID reinforced concrete pipe. The contractor had the choice of using pipe or placing reinforced concrete lining in place. Because of the amount of reinforcing involved, it was determined that lining with pipe was cheaper than placing concrete inside the tunnel.

Contractor in this work is a joint venture of Stolte, Inc., Oakland, Calif., and United Concrete Pipe Corp., Baldwin Park, Calif. The tunneling is only a portion of a $1,435,160 contract. Elof Gustafson was general superintendent for the contractor. Maurice R. McClure was the contractor's engineer and the tunnel shield was designed under his direction.

The shield was fabricated and detail drawings were made by Pacific Coast Engineering Co., Alameda, Calif. Hydraulic equipment was furnished by Rogers Hydraulics, Inc.

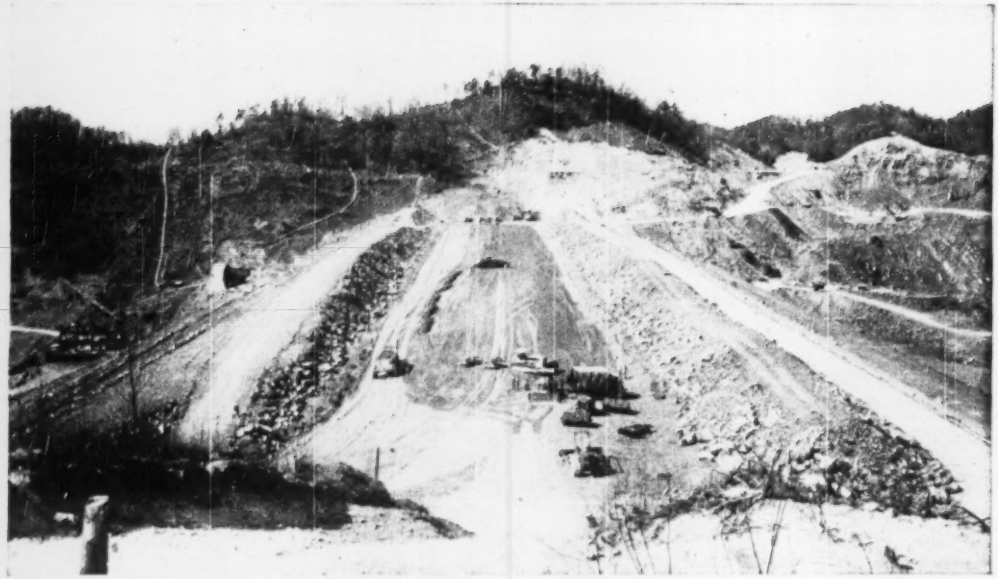
The project is being built for Special District No. 1 of East Bay Municip. Utility District as part of a $23,500,000 sewage disposal project now under construction. The work is under the general supervision of R. C. Kennedy, manager of sewage disposal engineering and construction, and W. R. McLean, who is in direct charge of construction. R. R. Murdoch was resident engineer for the district.

Microfilming Preserves U. S. Land Records

Something over 6,000,000 deeds covering every parcel of public domain land granted to citizens of the United States in 1788 are now being microfilmed by the Bureau of Land Management of the Department of the Interior.

The process, according to the Eastman Kodak Co., whose equipment is being used, covers every piece of property in Alaska and the United States, excepting the District of Columbia, Texas and eighteen eastern states, which can be traced to these deeds in Washington. Many of the old records are disintegrating as they are constantly handled in answer to an average of 500 inquiries a week from historians, novelists, realtors, lawyers, and title guarantee companies.

Copies of the deeds are now maintained in 11,700 bound volumes, occupying hundreds of feet of shelving and considerable floor space. When reduced to 100 ft rows of 35 mm microfilm, the entire record can be stored in ten film files of six drawers each.



EARTH CORE PLACEMENT had to catch up in spring with rock placement, which continued through winter at South Holston. Steel erection progresses on powerhouse at foot of dam (left). Shovels dig blasted rock from quarry (right).

Another Quarry Blast Fired As South Holston Dam Nears Completion

ANOTHER BIG BLAST—to loosen rock for South Holston Dam—was touched off by the Tennessee Valley Authority on July 8. But first, nearly 1,800,000 cu yd from the last great explosion (ENR Sept. 15, 1949, p. 45) was placed atop the structure—only dam TVA now has under construction.

This latest coyote tunnel blast produced a yield of 325,000 cu yd of loose rock—a small quantity compared with the yield of TVA's record blast of Feb. 5, 1949, when 1,362,985 lb of explosive were shot in over a mile of tunnels.

Coyote tunnels and big blasts—instead of the conventional well-drill method—have made rock no problem on the Upper Holston projects. Watauga Dam, just finished, has 1,771,000 cu yd of rock; South Holston (now over 85% complete) will contain 3,390,000 cu yd when finished.

Not only have the big blasts made rock readily available. They've made it cheap. Its cost in the quarry—ready to load for hauling—is $0.365 per cu yd. A 4 cu yd electric shovel loads it into rear dump trucks. Placed in the dam the rock costs $0.99 per cu yd.

Actually, earthfill is the critical item of construction of South Holston. It fell behind rock placement in the winter months when weather permitting rock work but was too inclement for earth compaction. Placement of the impervious rolled earth core resumed about April 15 and is progressing as fast as the weather allows. A fleet of 15 to 20 bottom-dump trucks is kept shuttling over the three-mile haul road from borrow area to top of dam. An elevating loader fills one of the 15 cu yd trucks with earth in 30 seconds. Over 2,000,000 cu yd of earth must be placed in the dam's central core. Its cost has been about $0.735 per cu yd to date.

Filter material—420,000 cu yd—will separate the earth core from rock fills on both sides. It is crushed rock upstream, quarry run rock downstream.

Total volume of the dam adds up to 5,900,000 cu yd. It will be 285 ft high with a 1,550-ft crest length. Thickness varies from 1,170 ft at the base to a 32-ft top width.

• On Schedule—Closure is scheduled for next Nov. 20. Installation of sluice gates and valves is expected to be finished during the low flow of late fall. Construction is on schedule; only land acquisition might delay closure.

Barring unforeseen delay, power production should begin in the single-unit, 35,000-kw plant about Feb. 1, 1951. It will be remotely controlled from Watauga Dam, 25 miles away.

A 128-ft dia morning glory spillway that tapers down to 34 ft in the horizontal diversion sluiceway-spillway tunnel through the dam's left abutment is finished. The steel liner and concrete backing is completed in the 15-ft dia power tunnel running 1,200 ft through the right abutment.

The dam will be able to store 785,000 acre-ft on the Holston River's South Fork; 110,000 acre-ft will be reserved for flood control at all times, 500,000 acre-ft in mid-winter.

Upstream on the 160-mi reservoir rim, an auxiliary overflow spillway is being built at one point and a 3,400-ft earthfill saddle dike is to be built at another. At present, only preliminary work—a very extensive clay-cement grouting of porous limestone—is under way at the saddle dike site.

Construction at South Holston is now under supervision of W. K. Seaman, project manager of the Upper Holston Projects, who succeeded George K. Leonard, TVA's new chief construction engineer. E. C. McClenagan is superintendent; Orcn Reed is construction engineer.

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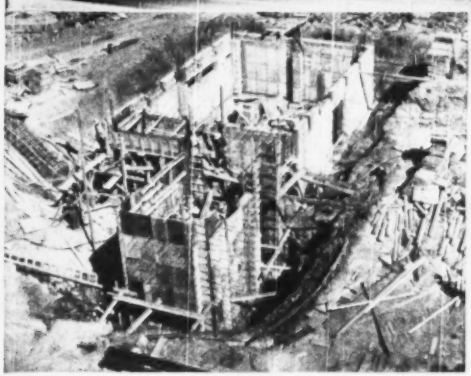

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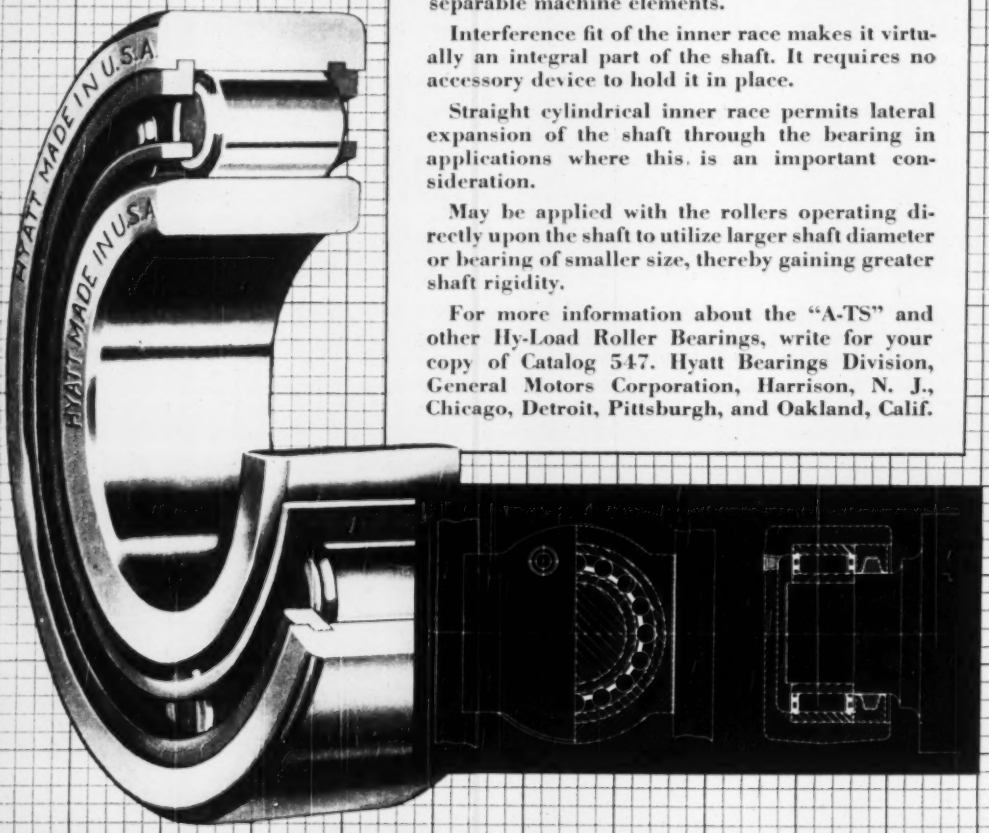
For more information about the "A-TS" and other Hy-Load Roller Bearings, write for your copy of Catalog 547. Hyatt Bearings Division, General Motors Corporation, Harrison, N. J., Chicago, Detroit, Pittsburgh, and Oakland, Calif.



HYATT ROLLER BEARINGS

READER COMMENT

Toll Roads and Free Roads

Sir: Some of the loose thinking regarding toll roads is evident in several articles which refer to the Merritt, Wilbur Cross, Hutchinson River, and Saw Mill River Parkways as toll roads. They are not. They were designed and are now operated as free roads except that in each case tolls are collected at one end. On the Hutchinson River Parkway in Westchester County, New York, for example, one can travel between Yonkers and Portchester, a distance of 14 miles, or intermediate distances, without paying a toll. On the Merritt Parkway in Connecticut one can travel between Greenwich and Bridgeport, a distance of 27 miles, or intermediate distances, without paying a toll.

In the case of the parkways, usage is decreased little, if any, by the collection of tolls at one end because they were designed and, except for the terminal toll, are operated as free roads. One can get on and off at numerous points of access. The use of the parkway is not denied to the short trip user.

Toll roads have many advantages and disadvantages but one of the serious disadvantages is that the number of points of access is limited by economic necessity resulting in decreased usage, *even by those who are willing to pay the toll.* In designing a toll road an interchange is omitted where the annual cost of constructing the additional bridge or bridges and additional roadways and providing and operating the toll booth is more than the expected annual toll collections at that point. This is in accordance with sound business principles, yet it is the crux of the design which results in decreased usage. It may be that good business practice should be set aside in the case of the toll road, which is, after all, a quasi-public venture, and require the toll road authority to locate interchanges where necessary to serve the community and to serve traffic, even though an occasional interchange may not show a profit on the investment required to construct and operate it.

The ideal toll road under the circumstances is one designed and operated as a free road but on which toll collections can be made anyway. Perhaps the license plate procedure proposed for New York State "Thruways" may be a partial meeting of this requirement.

A method which would more closely fit the ideal would be one in which finances are obtained by bond issue, using the credit of the state so that the interest rate would be less than half of the interest rate when revenues are the sole support of the bonds, and financing interest and amortization in several ways. Two suggestions for financing and a discussion of the amount of bonds required follow:

(A) Payment of tolls at bridges. Almost all major routes have one or more major bridges, the cost of which constitutes a large percentage of the total. These could be separately financed as toll bridges, with the toll applicable only to the cost of the bridge. Toll bridges, unlike toll roads, do not have the depressing effect of reducing usage due to inaccessibility because they are designed and operated the same as free bridges. A ramp at the middle of a river would serve no useful purpose. The bridge itself forms simply one point in the route as a whole which is designed and operated as a free route.

(B) Application of motor fuel taxes on the fuel actually used on the facility. It is a simple matter to calculate the vehicle miles of travel by the installation of permanent counters and in turn to calculate the amount of fuel used on a particular highway. The tax for this motor fuel would go a long way to pay the interest and amortization on bonds issued with the support of State credit. This feature was discussed in detail by the late L. I. Hewes in the April 13, 1950, issue of Engineering News-Record, p 42.

The amount of bonds required to finance a free highway would be less than that for a toll road because:

(a) A highway designed and operated as a free road will cost less even when designed to the same standards due to the greater simplicity of interchanges. On a toll road all four ramps at each interchange must be brought to one toll plaza, requiring additional right-of-way, additional mileage of ramps, and at least one extra bridge. The cost of the toll plaza, toll booths, and all appurtenances also add to the cost of a toll road.

(b) A highway designed and operated as a free road can permit an occasional crossing at grade of a very minor intersecting road. A toll road must cross every road on or under a bridge no matter how few vehicles use the crossroad.

(c) A highway designed and operated as a free road can be initially constructed to the needs of traffic without impairing standards and additional improvements made later as the increase in usage demands, saving, in the meantime, several years of in-

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terest and depreciation. While such saving can also be effected in the construction of a toll road it can be done to a limited extent only. For example, grade separations of lightly traveled intersecting roads can be deferred on free roads and additional funds borrowed and the bridges constructed several years later when they are really needed. This cannot be done on toll roads.

(d) Interest during construction is an appreciable amount and bonds to finance this amount must be sold. The lower cost of free roads reduces this amount below that required for toll roads; and the lower interest rate, when the State's credit is used, further reduces the amount in direct proportion to the interest rates.

A still further reduction in the funds required by the sale of bonds could be made by a state electing to use federal aid in the cost of constructing a highway on the federal-aid system, a procedure not permitted on toll roads. Federal aid may also be used in financing toll bridges on the federal-aid system when the tolls are used only for maintenance, interest, and amortization, and the bridge becomes free upon retirement of the bonds.

If we go one step further and consider maintenance and operation the advantage of a free road over a toll road of the same standards is further enhanced. The cost of collecting tolls is an appreciable item amounting to about 5½ percent in the case of the Pennsylvania Turnpike. Where motor fuel taxes are reserved for the servicing of bonds the transaction is little more than a bookkeeping item.

Considering the several ways in which the initial cost of a free highway can be reduced below that of an equivalent toll road, the further reduction in the amount of bonds required when federal aid participates in the cost and when major bridges are separately financed as self-supporting toll bridges, the markedly reduced interest required when the state's credit is used, and the avoidance of the cost of collecting tolls on a free highway, it is surprising that more consideration is not given to the rational and desirable procedure for financing high volume free highways outlined above.

It is unfortunate that we cannot have the benefit of the advantages of the toll road idea, namely, controlled access, high type highways constructed quickly because of the availability of funds, without the facility being burdened with the many disadvantages of toll roads.

JOSEPH BARNETT
Chief, Urban Highway Branch
Bureau of Public Roads,
Washington, D. C.

DEVELOPMENTS ABROAD

Tin, gas, grain and tools object of new U.S. loans

Marshall Plan funds totaling $1,700,000 have been earmarked for a Belgian firm mining tin in the Belgian Congo. The dollars will be spent for mining machinery to be purchased in the U.S., and the loan will be repaid in tin to be added to the U.S. stockpile.

Mines to be developed are in the Manono area, about 400 miles north of Elizabethville, in the eastern section of the Congo. The owners have worked the mines since 1919, but their mechanization did not begin until 1932.

Gasoline production in France will be boosted by ECA authorization of two refining projects, each to cost about $10,000,000. One is a catalytic cracking unit, with a gas recovery system, to be built near Marseilles; the other, a similar unit, will be installed at Port Jerome Refinery near Le Havre. ECA funds to be spent on the two projects total about $4,600,000.

An Export-Import Bank credit of $2,200,000 will finance construction of 14 grain treatment and storage stations in Colombia. The semi-official Food Development Corporation, backed by the Republic of Colombia, will build the facility to combat yearly losses of grain estimated at $20,000,000 due to lack of proper storage space. Adequate storage facilities are expected also to reduce seasonal variations in price.

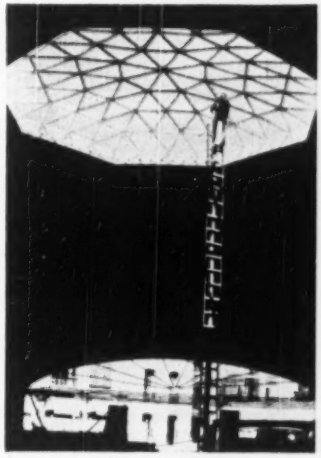
Colombia is also recipient of a $2,500,000 loan from the Export-Import Bank for purchase of road maintenance equipment from U.S. manufacturers. Mechanization of the country's highway department is expected to release many hand-laborers needed in agricultural work.

Motor graders, dump trucks, asphalt mixers, power excavators and crushing plants are among the various pieces of equipment needed in quantity by the country's highway builders.

Hydraulic researchers will meet in India

Arrangements are well under way for the meeting of the International Association for Hydraulic Research to be held in Bombay, Jan. 3-5, 1951. This will be the first of four international engineering conferences to be held in India this winter. Others are:

The World Power Conference, the International Commission on Large Dams, and the International Commission on Irrigation and Canals.



THIN SHELL ROOF—Market place in Algeciras, in southern Spain, was among structures used to illustrate advantages of thin-shell concrete construction in a lecture by Prof. Eduardo Torroja at the School of Engineering, University of Massachusetts. The 16-side building is topped by a 3.6-in. dome spanning 157 ft. A triangular grid transmits loads across the 33-ft. wide opening at the apex. Prof. Torroja, who has returned to Spain, also visualized construction of a roof of light covering material supported on a triangular steel grid.

Foreign Briefs

Spain—The Spanish Government proposes to finance the repair of 6,875 miles of badly deteriorated main highways in an effort to have them carry greatly increased tourist traffic. Plans include elimination of grade crossings and construction of by-passes around towns where narrow streets jam traffic.

Germany—Bricks composed chiefly of marine shells and concrete have been put in production at Wilhelmshaven after research on the process by the Hanover Technical College. The product is said to be cheaper than ordinary brick, have three times the insulating capacity and have structural strengths suitable for buildings up to two stories in height.

England—Exports of cement during the first six months of 1950 declined appreciably from last year's rate due to record demand at home. The industry is now delivering at the rate of 10,000,000 tons per year, compared with best prewar delivery of 8,250,000 tons per year.

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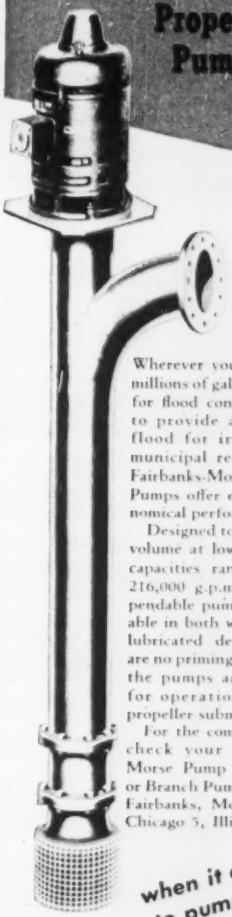

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MUNICIPAL AFFAIRS

CHARLOTTE, N. C., plans for a new $500,000 airport terminal, and for a municipal auditorium and sports arena. Population of the city is 133,212, which is 32% more than in 1940. Municipal services are being expanded to meet the higher demands.

Sewer service fees

An increasing number of cities are charging service fees to finance the disposal of sewage, according to the International City Managers' Association. Sewage disposal expenditures have been dropped by 273 cities from their general tax budgets, it was indicated by statistics gathered for the 1950 Municipal Year Book.

Camden, N. J., the largest city to establish sewer service charges in 1949, realized a revenue of $227,000 from that source in less than a year. Other cities which adopted the service charge during the year were Lansing, Mich., Portsmouth, Va., Joliet, Ill., Mason City, Iowa, Norristown, Pa., and Wichita Falls, Tex.

Four large cities—Buffalo, Cleveland, Detroit and Philadelphia—finance their disposal operations with special charges, computed, according to the Year Book survey, on metered water consumption; on a fixed percentage of the water bill; by fixed uniform rates; on the number of plumbing fixtures and sewer connections.

Municipal Briefs

N.Y. City public works—In his recent annual message to the city council, Mayor William O'Dwyer, of New York City outlined a program of public works to include completion of $1.3 billion in housing, half a billion for a Second Avenue subway, and construction and modernization of many public schools. Regarding the latter, the mayor said, "It is anticipated that contracts will be let during 1950 for 26 additional school projects to seat 24,254 pupils." By 1954, the mayor said, the city will have six new sewage-disposal plants, and cleansing of the waters around the city, by elimination of the main causes of water pollution, will be finished by 1958.

Flood protection—The water division of St. Louis, Mo., plans to start a $200,000 flood protection program this summer at the Chain of Rocks and Howard Bend pumping stations. Director of Public Utilities Conway B. Briscoe has announced.

(Continued on page 47)

(Continued from page 46)

More pay for engineers – The city council at Durham, N. C., gave City Manager R. W. Flack $15,000 for salary adjustments in its public works, engineering and other departments, after Flack told the body that "we are underpaying our junior engineers, and would make a mistake to forget these people who can do the work we need done."

Interceptor sewer – The Billings, Mont., city council has referred to Yellowstone County commissioners a proposal for construction of a $400,000 interceptor sewer line around the west and south edges of the city to serve outlying residential areas. The interceptor line was recommended by Black & Veatch, Kansas City, Mo., consulting engineers. The city has been reluctant to undertake expensive additions to the system in order to serve areas not within the city limits, and therefore turned the proposal over to county commissioners.

Housing the dispossessed—The Boston, Mass., Housing Authority will seek legislation to make possible the housing of persons dispossessed from slum clearance areas in state-financed projects, regardless of income provisions. Chairman Cornelius T. Kiley explained to Mayor John B. Hynes that such legislation is necessary before Boston can embark on its $40,000,000 slum clearance program, under which 2,000 apartments would be erected each year over a five-year period.

Chicago sewers—Chicago has finished $9,402,149 of new sewer construction in its postwar program started in 1946, Public Works Commissioner Oscar Hewitt has reported. He said that $3,784,240 of new sewers are now under construction and contracts are to be let soon for an additional project costing $1,600,000. This work is financed from the sale of part of the $58,160,000 sewer bonds approved by the voters in 1946.

Extra gains from lights—Downtown St. Paul, Minn., is getting extra dividends from the new type of street lights recently installed (ENR, June 15, page 56). The new lights are mounted on the fronts of buildings. They give much better illumination and eliminate glare.

Water treatment plant—Winter Park, Fla., has received an award from the State Health Department for the best operated primary water treatment plant. Lloyd H. King is manager of the plant.

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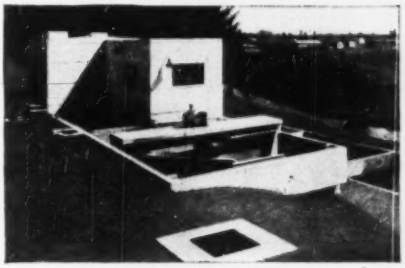

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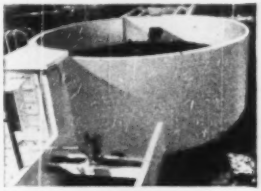

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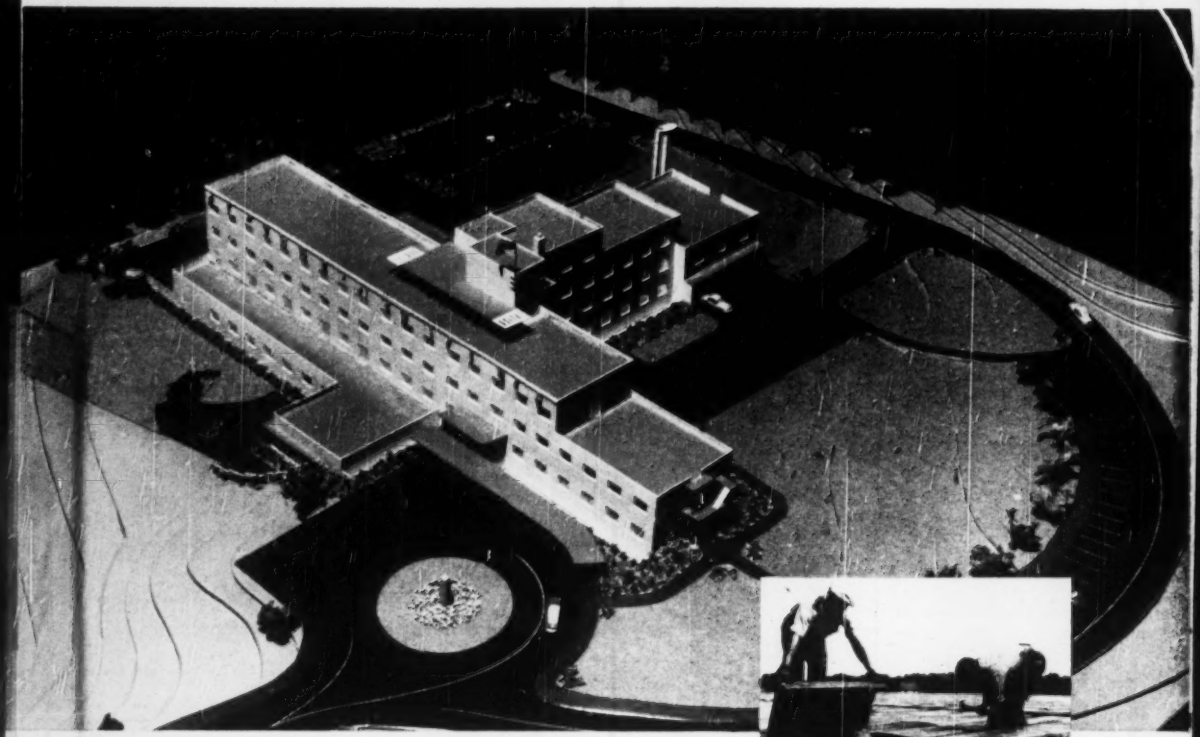

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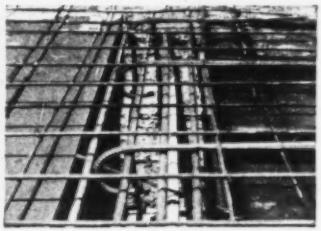

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MEN AND JOBS

Goodrich W. Lineweaver has been promoted to an assistant commissionership of the Bureau of Reclamation. For the last five years he has been director of the operation and maintenance branch.

E. W. Seckendorff, right has been named assistant to the manager of General Electric's design and construction divisions at Hanford Works, Richland, Wash., while **J. S. Parker**, left, succeeds to Seckendorff's former post as manager of the separations division of Design & Construction.

Albert Forde, former Dayton, Ohio, traffic engineer, has joined the traffic engineering bureau at Chicago.

Patrick D. Ross has joined the Charles C. Haynes, Jr., Construction Co. at Durham, N. C., as engineer and chief supervisor of construction. He is an alumnus of Duke University.

Col. Hans W. Holmer is to take over as district engineer at Little Rock, Ark., for the Corps of Engineers. Since January, 1950, **Lt. Col. Otto J. Bohde** has been acting district engineer, Little Rock district. Colonel Holmer has served in the Office of the Chief of Engineers since January, 1948, first as chief of the management division and later as engineer comptroller.

Aldrich Durant, engineer and former business manager of Harvard University, has been elected chairman of the Cambridge, Mass., Planning Board. He succeeds Prof. Frederick J. Adams of the Massachusetts Institute of Technology, who continues a board member under a recent 5-year appointment by City Manager John B. Atkinson.

Rear Adm. Harold W. Johnson, at present district civil engineer for the Twelfth Naval District, San Francisco, becomes district civil engineer, Fifth Naval District, Norfolk, Va., succeeding **Rear Adm. Andrew G. Bisset**, scheduled to retire after more than 30 years of service.

D. G. Pearce, formerly in charge of the division offices at Wilson, N. C., has been named superintendent of the North Carolina Highway Department's central equipment depot at Raleigh, N. C. He succeeds **Hal Tharrington**, who joins the division unit at Greenville.

S. D. Coplon is manager of Engineering Service, civil engineering and materials testing in the Continental Book Bldg., Salt Lake City, Utah. The testing laboratory is located at Kearns, Utah.

Louis G. Mertz Jr., construction engineer, is now supervisor of construction for Webb & Knapp Inc., New York. Mr. Mertz has had wide experience in his work. One of his most recent jobs was the $8,000,000 plant for Robbins Mills, Inc. of New York, erected in North Carolina.

Frederick Mardus, consulting engineer, New York, has joined as an associate in the engineering firm of Byrne Associates, 50 Broadway, New York.

B. N. Hannon is administrative officer for the Garrison district, Corps of Engineers. Previously he had been at Denver, Fort Peck and Vicksburg. He takes the place of **Capt. F. J. Dirker**, transferred to Fort Belvoir, Va.

John P. Kiley, left, civil engineer, who will become president of the Chicago, Milwaukee, St. Paul and Pacific Railroad on Aug. 31, is being congratulated by Charles H. Buford, whom he succeeds. Mr. Kiley took his civil engineering degree at Villanova College in 1915, and joined the railroad. He has been vice-president.

F. Ellis Johnson, formerly dean of the school of engineering at the University of Washington, has retired from the position he has held since 1946 in directing the General Electric Co.'s educational program at the Hanford Works.

Louis R. Slyter, previously with the Washington state highway department, has been appointed assistant city engineer at Centralia, Wash.

Col. R. C. Brown, Army district engineer at Wilmington, N. C., also has been designated acting district engineer at Charleston, S. C., until a permanent successor is assigned for **Lt. Col. James B. Lampert**, transferred to Tulsa, Okla., as head of the branch office of the Southwestern Division.

A. F. Cousins is the new engineer of Cass County, N. D. He studied civil engineering at Iowa State College and has had long highway engineering experience.

John Adams of Ottawa, Ont., has resigned as engineer of Carleton County, Ont., and has been appointed county engineer and road superintendent of Essex County, Ont.

Lt. Col. Walter Krueger has been assigned to the Huntington, W. Va., district, as district engineer. Colonel Krueger, who has been attending the Air War College, Maxwell Air Force Base, Ala., will succeed **Col. David T. Johnson**, who has been assigned to the Columbus General Depot, Ohio, as engineer supply officer.

Howard L. Grant, formerly vice-president of the Garrett Engineering Co., Houston, Tex., has opened the Howard L. Grant Engineering Co. at 607 Lamar Boulevard, Austin, Tex.

Engineers and Architects

will find this 40 page pictorial bulletin full of outstanding jobs that were built with Teco timber connector construction, glued laminated timbers and Lamella timber construction:

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	Garages
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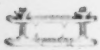
FLEXCO H D RIP PLATES are used in repairing rips and patching conveyor belts. Their use saves expensive replacements and extended shutdowns.

● Avoid shutdowns and lengthen the life of your conveyor belts and bucket elevator belts by using Flexco belt fasteners. Thousands of companies have stepped up the performance of conveyor lines and cut costs by using Flexco methods.



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EDUCATION and RESEARCH

Kansas University civils are in wide demand

Reports from some schools are that the number of civil engineering graduates exceed the current demand. But this does not apply at the University of Kansas where all 34 graduating civil engineers had obtained jobs by June 5, the commencement date. Seventeen who were graduated last February had little trouble finding jobs, and there is a waiting list for 10 who will receive their degrees following this year's summer school.

The biggest demand this year, according to George W. Bradshaw, chairman, civil engineering department, came from the Kansas State Highway Department, with starting salaries of $267 per month. Starting salaries offered other graduating civils include: $250 per month by consulting engineering firms; $275 by railroads; and up to $325 per month by one construction company.

There also is a brisk demand for all other classes of graduating engineers, according to T. DeWitt Carr, dean of the engineering school. This applies to the 57 June graduates in mechanical engineering, 47 electricals, 23 architects, 18 petroleum engineers, 17 aeronautical engineers, 14 chemicals, 10 architectural engineers, and 14 graduating in metallurgy, mining and geology.

Carnegie Tech's president, R. E. Doherty, retires—

Robert E. Doherty, for the last 14 years president of Carnegie Institute of Technology, has retired.

In his first year as president, 1936, he inaugurated what has since become known as the Carnegie Plan of Professional Education, which has made major contributions to both technical and liberal arts education. Its aim is to teach students how to learn by themselves so that after college they will be able to go on learning. He has doubled Carnegie's endowment, and was successful repeatedly in raising current or operating funds for special projects.

In 1936, Carnegie's research budget was about $150,000. This year it is $750,000. A long list of research equipment has been added, including the 400,000,000 electro volt synchro cyclotron.

Clay H. Hollister, who was chief of the industrial division of the ECA (Marshall Plan) in France, has been appointed head of the department of engineering administration at Case Institute of Technology in Cleveland.

Education Notes

For A.B. and B.S. degrees—Illinois Institute of Technology has completed arrangements with the second or two liberal arts colleges to enable students to receive both A.B. and B.S. degrees after five years, the last two of which are spent at Illinois Tech. Students who complete three years at Westminster college, Fulton, Mo., may transfer to Illinois Tech for two additional years in civil or other engineering fields. A similarly coordinated program is now in effect with Washington and Jefferson College, Washington, Pa.

Prof. W. B. Wendt resigns—Prof. W. B. Wendt of the Speed Scientific School, University of Louisville, Ky., has resigned as head of the civil engineering department. He will be succeeded by his associate, Prof. W. R. McIntosh. Professor Wendt will continue to teach in the department. He has served on the faculty for a quarter century.

Engineering jobs—Concerned that declining numbers of new engineering students may result in an actual shortage of trained men within a few years, the Engineers' Society of Milwaukee, Wis., is seeking to create new engineering job openings there. It also is increasing its undergraduate counseling activities.

Reading skills—Lack of reading skills was singled out as the chief cause of students' inability to cope with the demands placed upon them, representatives of 24 institutions from six states attending the recent American Society for Engineering Education convention at Lehigh University were told by Stella S. Center, director of the reading institute of New York University. Pointing out that comprehension is more important than speed or rate of reading, she said that unless a student has an average speed of approximately 350 or 400 words per minute, he will be overwhelmed by the reading demands made on him. In reading difficult, technical material, speed is not so important a consideration.

"The student must be able to translate words, figures, equations, formulas into concepts that have meaning for him," she continued. "It is only by systematic practice with increasingly difficult material that the student grows in comprehension, rate of reading, appraisal of what he reads, and in accuracy and scope of vocabulary.

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America has learned to expect the most from Chevrolet. And now the line that outsells all others brings truck users still more: More power—to make light of maximum loads. More value—to make sure of minimum costs.

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Chevrolet trucks outsell all others. In every postwar year truck users have bought more Chevrolets than any other make—proof of the owner satisfaction they have earned throughout the years.

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ELECTIONS AND ACTIVITIES

William C. Tait, head of the Tait Construction Co., San Francisco, was recently elected chairman of the Western Chapter of Associated General Contractors at the close of a two-day conference of the organization in Reno, Nev. He succeeds H. L. Royden, of Phoenix. New vice-president is A. S. Horner, of Denver, head of the Horner Construction Co.; second vice-president is John H. Sellen of Seattle, Sellen Construction Co.; secretary is Frank Corker, San Francisco.

Edmund A. Prentis, of Spencer, White and Prentis, Inc., New York, has been awarded a certificate for outstanding service in standardization by the American Standards Association. He was president of ASA 1939-40, and the award was made in recognition of his service in support of the standards movement.

MAJOR MEETINGS

Photogrammetry Seminar University of Denver, Denver, Colo., Aug. 7-11.

Maine Water Utilities Association, summer meeting, Mt. Desert Island, Me., Aug. 9.

ASCE North Carolina section, joint meeting with N. C. Society of Engineers, Wrightsville Beach, N. C., Aug. 18-19.

Pennsylvania Water Works Operators' Association, annual conference, Nittany Lion Inn, State College, Pa., Aug. 21-22.

Pennsylvania Sewage & Industrial Wastes Association, Nittany Lion Inn, State College, Pa., Aug. 23-25.

N. Y. section A.W.W.A., fall meeting, Saranac Inn, Upper Saranac Lake, N. Y., Sept. 7-8.

Canadian Institute on Sewage and Sanitation, annual convention, Bigwin Inn, Ontario, Sept. 11-13.

W. Va. section A.W.W.A., annual meeting, Prichard Hotel, Huntington, W. Va., Sept. 13-14.

American Railway Bridge and Building Association, annual meeting, Hotel Stevens, Chicago, Ill., Sept. 18-20.

New England Water Works Association, Poland Springs, Me., Sept. 18-21.

N. Y. Metropolitan section, Institute of Traffic Engineers, annual meeting, Commodore Hotel, N. Y. City, Sept. 24-27.

American Institute of Park Executives, annual convention, Baker Hotel, Dallas, Tex., Sept. 25-28.

Pennsylvania Water Works Association, Claridge Hotel, Atlantic City, N. J., Sept. 26-29.

Rocky Mountain Sewage Works Association, La Fonda Hotel, Santa Fe, N. M., Sept. 27-29.

OBITUARY

Lee T. Turner, 58, building contractor in the District of Columbia, died June 27 at Washington. He had been a general contractor for more than 25 years.

John M. Rice, 65, for 30 years an engineer and in the '30's chief engineer of the Allegheny Sanitary Authority, Pittsburgh, Pa., died June 24.

George Wallace, civil engineer with Manitoba's Provincial Highway Branch, died suddenly July 1 at Fort Frances, Ont.

William C. Hanson, 65, structural engineer and former president of the National Iron Co., Duluth, died recently in Duluth where, since his retirement in 1948, he has been interested in engineering work on taconite development.

Victor E. Waterloo, 56, who was a civil engineer in the Ohio Highway Department for 26 years, died July 3 in Columbus, Ohio. He was a 1923 graduate of Ohio Northern University.

William J. Howland, former superintendent of highways of Delaware County, N. Y., died at Melrose, Mass., July 8. He had held the position from 1925 until his retirement in 1946 and had been a captain in the construction division of the Army Engineer Corps in World War I.

Arthur W. Connor, 79, died in Toronto July 9. Before his retirement three years ago he had been active in engineering practice for 45 years.

William F. Metzger, 70, construction engineer employed by Herbert Voelcker and Associates of Houston, died in Port Arthur, Texas, July 9.

J. S. Howard, 66, civil and consulting engineer in Maryland for about 40 years, died recently in Baltimore.

Henry H. Kranz, 63, president of the municipal division of the American Road Builders' Association and city engineer in Cincinnati, Ohio, died recently. He took his civil engineering degree from the University of Cincinnati and was a captain in the Army Engineers in France during World War I.

Peter A. Salsbury, 55, Washington (D. C.) building contractor for the past 19 years, died July 7 in Washington.

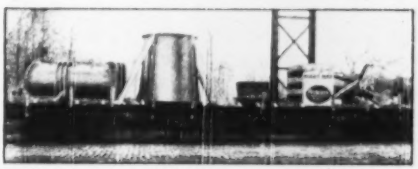
RAW SEWAGE

. . . And Storm Water, too. Both are being handled in trouble-free manner in scores of communities by the "Big Fellows" . . .

Morris Storm Water and Raw Sewage PUMPS

WHAT kind of work do these "Big Fellows" do? In some communities, they handle enormous quantities of sewage and storm water. In others, they handle irrigation or drainage. In all instances, they are designed to perform with the utmost efficiency, safety, and dependability. They often take staggering punishment — particularly when conditions are unusual. But these "Big Fellows"—Morris Storm Water and Raw Sewage Pumps — *have extra stamina.*

THE "BIG FELLOW"—a Morris 42" Vertical, Mixed Flow Pump. It's one of several which recently were installed for handling storm water and sewage for a large West Coast community. Has gigantic capacity—60 MGD. Handles raw sewage at 50,000 GPM against 25 Ft. TDH.



TAKES ALL OF A FLAT CAR to carry one of these Morris titans of service to its destination.

Of mixed-flow type, many operate with peak efficiency of 90%. Design can be entirely self-contained. Often one forced oiling system lubricates both pump and motor bearings. Motor weight can be supported by strong conical weldment—permitting the transmission of motor loads directly through weldment to heavy cast feet without casing strain. The need for a separate floor to support the motor is eliminated. Large manholes provide maximum accessibility—*impeller ring clearances easily checked.*

Morris Storm Water and Raw Sewage Pumps come in sizes ranging from 4" to 84" diameter discharge—ideally suited for capacities to 450 C.F.S. Horizontal and vertical types. For special use, Morris builds to suit your specifications. Consult a Morris Engineer without obligation.

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MORRIS *Centrifugal Pumps*

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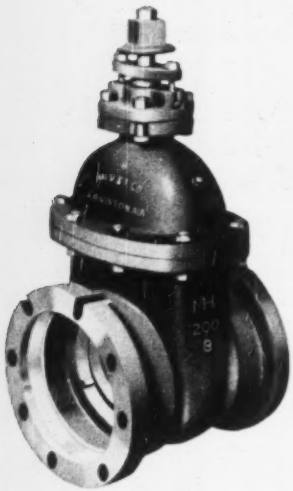
EASY TO INSTALL MECHANICAL JOINT



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UNIT PRICES BID BY CONTRACTORS

Viaduct reconstruction N. Michigan Ave., Chicago

Repairs and reconstruction of a North Michigan Ave. viaduct, Chicago, brought a low bid of $341,872 May 24 when the City Department of Purchases, Contracts and Supplies took bids. The four bids received were just 8% apart, with the low bid being less than 1% below the second low.

The job is located between the Chicago R. and Grand Ave. It includes removing and replacing the deteriorated concrete and steel, installing new roadway and sidewalk expansion joints, rehabilitating stone work on enclosure walls at bridge houses north of the Chicago R., new stairways and pipe railings.

The contractor must furnish all materials, equipment and labor and complete the work within eight months. Wage rates are: equipment operators, $1.75-$2.75 per hour; cement finishers, $2.35; structural ironworkers, $2.50; common laborers, $1.80; concrete laborers, $1.92½; tuck pointers, $2.60.

An unusual feature is the listing of the mechanics and laborer's time, at the bottom of the unit price table, in the bid items to cover possible contingencies requiring additional labor. The price bid on the items includes tools, plant equipment, supplies, insurance bond, overhead and profit for such labor.

Bidders were:

1. Chris Paschen Maintenance Co., Chicago (contract)	$341,872
2. J. M. Corbett Co., Chicago	344,650
3. Michael J. McDermott & Co., Chicago	356,730
4. Midwest Contractors, Inc., Chicago	371,206

Items	Quantity	Unit Prices ¢	$	
Barricades, signs & lights	ls		$1,500	$15,000
Removal of coner	cy	700	92.35	65.00
New coner	cy	500	90.04	80.00
Struc. & misc. steel removal	lb	85,000	.30	.23
New struc. steel	lb	70,000	.45	.40
New roof forms	lb	29,000	.35	.20
Cut reinf. st. weld	lb	41,000	.80	.45
NE. end wall, stairway repairs	ls		14,320	15,500
Statue work rehab.	ls		7,420	11,000
New stone balusters	ea	135	32.50	50.00
Tuck pointing	ls		5,650	12,000
Struct. st. clean & joint	sf	40,000	.18	.25
C.I. guards, repl.	ea	100	85.60	65.00
Membrane waterpr.	sy	150	3.60	4.00
Asph. exp. jt. matl., remov. & repl.	lf	200	.60	5.00
Std. portland cmt.	bbl	150	5.54	8.00
High early str. portland cmt.	bbl	700	6.09	10.00
Gran. blk. paint, rem. & relay	sy	150	10.00	12.00
Remove other sheet	ls		1,875	5,500
New stairwell rails	lf	300	27.50	40.00
New stairwells & pipe rails	ls		10,335	10,800
Struct. st. remov. & reset	lb	35,000	.69	.80
New stone other than balusters	cf	65	20.50	20.00
Prac. of Dgls. in time	Mdls		5,365.00	450.00
Mechanics' time	hr	300	6.45	5.00
Laborers' time	hr	300	4.80	3.50

Concrete pipe wins in Ohio water line bids

Separate unit prices on labor and materials were an unusual feature of the bids taken April 27, 1950, on the $238,318, 24" water supply line, Montgomery Co., Ohio. The contract was awarded on the pressurized concrete pipe alternate to the Burch Construction Co. of Dayton on a bid $26,148 below the low bid for cast iron pipe. Price Brothers Co., Dayton, will manufacture the pipe. Ralph E. Woolpert Co. are consulting engineers; E. W. Riber, county sanitary engineer.

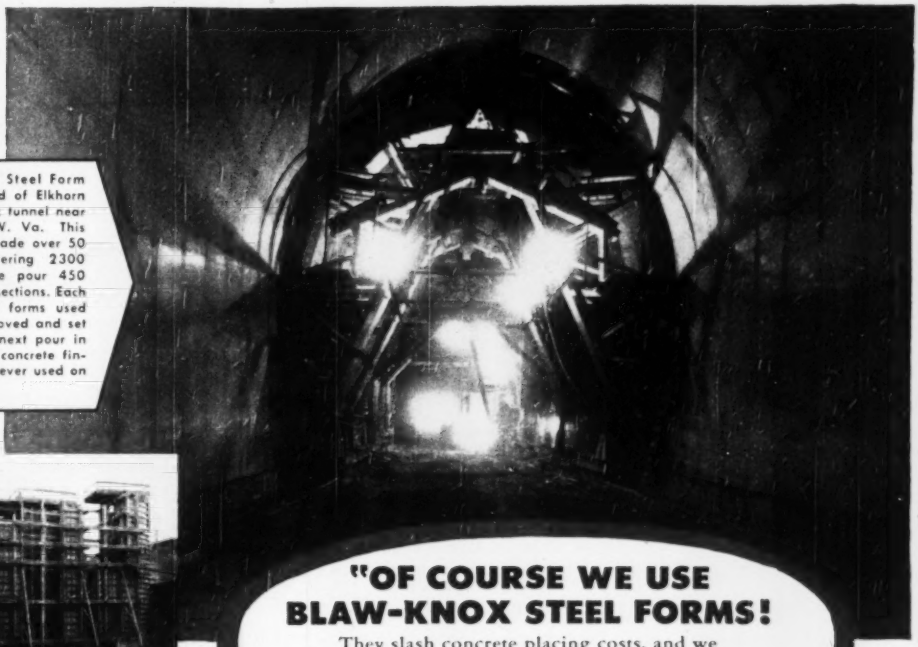
The 3-mile long pipeline in Van Buren and Miami Townships is part of the Greater Moraine Water System. It will connect with existing lines at Lamme Rd. near the well field and with lines at Shroyer & David Rds. The job site is 2 miles from a railhead. Sections of the pipe line cross a golf course which will remain open during construction.

Work started July 1 and must be completed by Nov. 1. A penalty of $25 per day will be invoked after this date.

Eight contractors submitted bids to the Board of County Commissioners. They could bid on three bidding plans: cast iron pipe, reinforced concrete pipe, steel cylinder type, prestressed; or reclaimed lock joint standard steel cylinder reinforced concrete pressure pipe.

Wage rates to be paid are: skilled labor $2.35 an hour; semi-skilled $1.70; common, $1.35; pipe layers, $1.60; power equipment operators, $1.67½-$2.45. The listing below shows the labor cost, materials cost and the total unit price bid on each item by the low bidder.

Items	Quantity	Unit Prices Labor	Matls.	Total
Water mains, f. & i.				
24" conc.	lf	17,710	$2.50	$1.50	$11.00
8" c.i., MJ	lf	955	1.60	2.40	4.00
6" c.i., MJ	lf	210	1.35	2.65	4.00
24" gate vlv., 8" bypass, f. & i.	ea	7	118.00	1,022	1,140
Gate vlvs., f. & i.					
12"	ea	5	19.00	151.00	200.00
10"	ea	1	16.00	114.00	168.00
8"	ea	2	24.00	76.00	100.00
6"	ea	11	23.50	46.50	70.00
Vlv. boxes, f. & i.	ea	19	5.00	15.00	20.00
Fire hydrants					
furn. & inst.	ea	8	27.00	123.00	150.00
remov. & reloc.	ea	1	50.00		50.00
Valves, f. & i.					
2½" firing hose, 90s	ea	1	15.00	25.00	40.00
1" air relief	ea	2	10.00	30.00	40.00
Air relf. & air release comb.	ea	3	20.00	30.00	50.00
Manholes, for 24" vlv., f. & i.	ea	7	100.00	100.00	200.00
Std. mh. f. & i.	ea	6	70.00	70.00	140.00
1" taps, serv. connect.	ea	25	50		50
Grav. bkfl.	cy	4,125	.20	.80	1.00
Pvt. conc. rd. surf. repair	sy	2,900	1.00	5.00	6.00
Conc. pav. st. hwy. crossing	sy	30	4.50	3.50	8.00

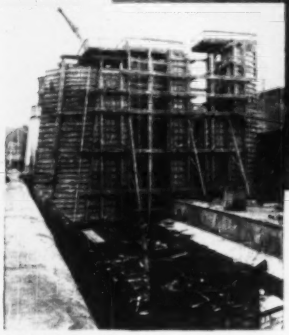


Blaw-Knox Steel Form on west end of Elkhorn double track tunnel near Coaldale, W. Va. This form has made over 50 moves, covering 2300 ft. Average pour 450 yds. in 45' sections. Each of the two forms used could be moved and set up for the next pour in 3 hours. A concrete finisher was never used on the job.

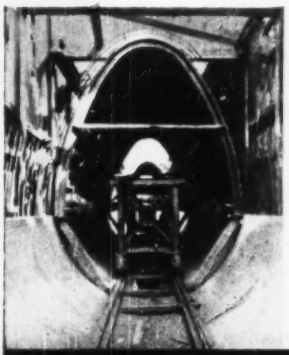
"OF COURSE WE USE BLAW-KNOX STEEL FORMS!

They slash concrete placing costs, and we can depend on Blaw-Knox *engineering experience* to help us solve tough or unusual problems."

"Bob" Parker,
Haley, Chisholm & Morris
Charlottesville, Va.



Typical of the wide variety of work handled by Blaw-Knox Steel Forms, the locks shown above are being built with Blaw-Knox Pier Forms. Below, a large sewer being constructed with Blaw-Knox adjustable forms.



BOB PARKER has used Blaw-Knox Steel Forms for many years on his big construction jobs. He's had such success, satisfaction and economy that "of course" he chose them again for the Elkhorn tunnel on the Norfolk & Western R.R., the second double track tunnel the company has built since 1947 with Blaw-Knox Steel Forms.

When Bob is faced with a tough or unusual concreting problem, he never hesitates to call on Blaw-Knox for the engineering service that helps him save time, eliminate costly and unnecessary operations. Backed by more than 40 years' experience as the original and most prominent maker of Steel Forms for heavy construction, Blaw-Knox can help you by recommending the most efficient forms for your job and the most simplified, time and money-saving forming methods. This Blaw-Knox consultation service is available to any contractor for planning profitable construction jobs as early as the blue print stage.

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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

WATER SUPPLY

BIDS ASKED

▲ Ont., Ottawa—B.A. 8/1—Chairman and members Bd. Control, c/o City, 48 Rideau St., supplying, 5 del., jointing steel pipe, specials or alternative of steel cylinder concrete pipe and specials for 42 in. watermain on Scott St. from Bayview Rd. to McRae Ave. Approx. $1,600,000. W. E. MacDonald, c/o owner, engr.

LOW BIDDERS

Ark., Magnolia—City Water Comm., W. W. Walker, chm., July 7, improv. water dist. incl. furnishing, installing 5,570 lin. ft. 2-to 10-in. c.i. pipe, 55,000 lb. fittings and 43,580 lin. ft. 6 and 8 in. pipe, 120 valves, boxes and 48 fire hydrants, etc. from Griffin Constr. Co., Inc., Merriam, Kan. $84,834. Est. $97,027. CD 6/20.

SEWERS, WASTE DISPOSAL

BIDS ASKED

Ark., Hope—Bids Asked in August—City, sewage treatment plant with auxiliaries, appurtenances, sewers. Charles O. Thomas, Hope, engr.

Calif., Imola—B.A. 8/4—State Div. Architecture, P. Wks. Bldg., Sacramento, outfall sewer at Napa State Hospital. Arson Boyd, Sacramento, state archt.

LOW BIDDERS

▲ O., Cleveland—City, City Hall, July 7, sewage plant improv., E. 49 St. and Canal Rd., 3,100 ft. concrete precast sewer pipe for intercepting sewers, from Kassouf Co., 9715 Clinton Rd., $584,000; digestion tank and 4 concentrating tanks, 6 tank covers, from Heakin-Corkery Constr. Co., 1740 E. 12 St., $1,987,300. Est. $2,270,000. CD 6/12.

CONTRACTS AWARDED

Ia., Shenandoah—City, storm sewers, to Fred Eisert, Fairfax, Mo., $134,850. Bids 6/30. CD 6/23.

Tex., Dallas—W. Leslie Hill, 4953 E. Lovers Lane, storm sewers. Approx. $60,000; sanitary sewers, $50,000 (1st unit) south side, own forces. CD 7/10.

BRIDGES

LOW BIDDERS

New Jersey—New Jersey Turnpike Auth., War Memorial Bldg., Trenton July 13, Contr. 39, substructures for Trumbull St. viaduct and Homboldt Ave. bridge, Union Co., from Koppers Co., Inc., (Metal Products Div.), Garret Bldg., Baltimore, Md., $517,953. CD 6/27.

▲ N. Y., New York—Dept. P. Wks., Municipal Bldg., Zone 7, Contr. 3, superstructure south unit and reconstructing north unit Eastern Blvd. Bridge over Bronx River, Bronx Boro, from Horn Constr. Co. Inc., 1716 Broadway, Zone 19. $1,338,262. CD 6/28.

CONTRACTS AWARDED

Kentucky—State Hy. Comm., Frankfurt, underpass and approaches, Southern Railway Co. Tracks, Rosemont—U. S. 27 Rd. (Jesselin) Proj. RS 34-444, Fayette Co., to Hinkle Contg. Co., Paris, $62,383; bridge, approaches over Whites Run Creek and Goose Creek, Carrollton-Worthville Rd., Proj. S 46(1) SP 21-72, Carroll Co., to Huron Contg. Co., Benton, $99,822. Bids 7/7. CD 6/22.

STREETS AND ROADS

LOW BIDDERS

Kentucky—State Hy. Dpt., Frankfort, July 7, reconstr. bit. surf. 7.936 mi. Rectorville-Orangeburg-Mt. Carmel Rd., Proj. RS 81-375, Mason Co., from J. G. Exter-Kemp Sons, Covington, $81,931; reconstr., traffic bound surf. 5.975 mi. Winchester-Hunt Rd. (Jackson Ferry), Proj. RS 25-142, Clark Co., from W. M. Hooper, Henderson Hite Constr. Co., Caneyville, $152,822. CD 6/22.

CONTRACTS AWARDED

Kentucky—State Hy. Dpt., Frankfort, traffic bound limestone 7.165 mi. Big Creek-Nolan-West Virginia Line Rd., Proj. RS 98-421, Pike Co., to Eastern Constr. Co., Richmond, $162,795***reconstr., traffic bound surf. 6.276 mi. Millsboro-Plummers Mill Rd., Proj. RS 35-420, Fleming Co., to Nally & Gibson Springfield, $65,168***bit. surf. Class I, 7.777 mi. Old Third St. Rd., Proj. RS (56)298) (56,308), Jefferson Co., to H. K. Williams, Louisville, 4141 Park Blvd., Louisville, $68,668***c. concrete paving 0.48 mi. Hazard Relief Rte., Proj. U 138 (15) SP 97-542, Perry Co., to Foster & Creighton Co., American National Bank, Nashville, Tenn., $88,7000***traffic bound surf. 3.099 mi. Elkhorn City-Virginia State Line Rd., Proj. S 199 (2), SP 98-223, Pike Co., to Geo. H. Cheek Constr. Co., McClure Bld., Frankfort, $204,468***bit. surf. Class I and traffic bound limestone 0.984 mi. Elizabethtown-Radcliffe-Louisville Rd., Proj. SP (42-19) (47-299), Hardin Co., to Breslin Constr. Co., 1801 S. Brook St., Louisville, $50,557***bit. surf. Class c-1, 16.18 mi. Proj. RS Group 3 (1950), Letcher Co., to Ky.-Va. Stone Co., Middlesboro, $72,344***bit. surf. 26.50 mi. Proj. RS Group 4 (1950), Logan Co., to State Contg. Co., Hartford, $84,099. Grand total $796,799. Bids 7/7. CD 6/30.

EARTHWORK, WATERWAYS

LOW BIDDERS

† Missouri—U. S. Eng., Clock Tower Bldg., Rock Island, Ill., rejected bids June 23, upper approach dike transition sections, Lock and Dam 22, Mississippi River on right bank in Rails Co. about 1 mi. downstream from Saverton. CIVENG 11-117-50-55. Will re-advertise. CD 6/5.

Tex., Anson—City, July 6, Thompson Creek Dam improv., from W. O. Pelphrey Electric Bldg., Fort Worth, $32,680. Est. $30,000. CD 6/26.

Tex., Dallas—City, City Hall, Main and Harwood Sts., July 6, open channel for Bekar Street outlet, from H. J. Collins, 1924 Park Ave., $29,916. J. T. Conroy, city engr.

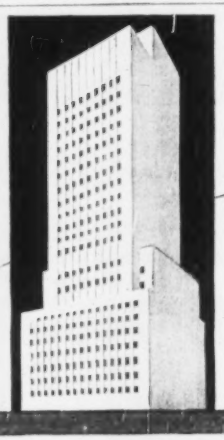
Tex., Freeport—City, rejected bids June 22. Constr. 2, storm levees, L. B. $30,150. CD 7/7, under LB.

AIRPORTS

CONTRACTS AWARDED

Tenn., Knoxville—AIRPORT—City, City Hall, McGhee-Tyson Airport impres.; to Harrison Constr. Co., Maryville, $432,778. Bids 7/10.

extra white



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PUBLIC BUILDINGS

BIDS ASKED

Ont., Hamilton—SCHOOL—B.A. 8/1—J. H. Haffa, archt., 294 Ontario St., Toronto, 2 story, bsmt., 14 room steel, stone faced high school addn. for Cathedral R.C. High School, Main and Emerald Sts. Approx. $375,000.

N. Y., Narrowsburg—SCHOOL—B.A. 8/4—Bd. Educ., Central School Dist. 1, Towns of Tusten and Cochecton, School Bldg., Narrowsburg, electrical work for the alterations and addn. to Narrowsburg Central School. Plans deposit $20. H. D. Fullerton, 152 Washington Ave., Albany, archt.

LOW BIDDERS

▲ Md., Baltimore—SCHOOL—City Bureau Bldg. Constr., 41 Municipal Bldg., Zone 2, rejected bids July 5, 1 story, part bsmt., approx. 1,056,426 cu. ft., concrete, steel, masonry Armistead Gardens School, L. E. B., $1,267,525. Will advertise. CD 7/12.

▲ N. J., Paterson—HOUSING—Paterson Housing Auth., 29 Harris St., July 11, low rent housing consisting 38 structures, containing 246 dwelling units on 27 acre Almshouse Site, from Terminal Constr. Co., 194 Hackensack St., Wood Ridge, $1,965,000. CD 6/27.

N. Y., Brooklyn—SCHOOL—Supt. School Bldgs., Design & Constr., 49 Flatbush Ave. extn., Zone 1, general constr., P. S. 251, Avenue I and E. 54 to E. 55 Sts., from T. G. K. Constr. Co., Inc., 55 W. 42 St., New York, Zone 18, $878,500.

▲ N. Y., New York—SCHOOL—Supt. School Bldgs., Design & Constr., 49 Flatbush Ave. extn., Brooklyn, Zone 1, July 6, general contract P. S. 142, Hamilton Pl., Amsterdam Ave., W. 140 and W. 141 Sts., from Caristo Constr. Co., 26 Court St., Brooklyn, Zone 2, $1,222,000. CD 6/15.

CONTRACTS AWARDED

▲ N. Y., Brooklyn—HOUSING—New York City Housing Auth., 63 Park Row, New York, Zone 7, general constr., Sect. 11, Farragut Houses, Proj. No. NYS-29 in area bounded by Nassau, Gold, Sands and Navy Sts., to S. S. Silberblatt Inc., 5 W. 45 St., New York, Zone 19, $2,338,000. Bids 5/2. CD 5/4.

▲ Va., Catawba—HOSPITAL, etc.—State Richmond, hospital and nurses home at Catawba Sanatorium, Roanoke Co., to J. A. Jones Constr. Co., 209 W. 4 St., Charlotte, N. C., $1,114,000. Bids 6/21. CD 7/6, under LB.

COMMERCIAL BUILDINGS

BIDS ASKED

Pa., Spangler—HOSPITAL—B.A. 8/1—Miners Hospital, Spangler, 3 story, bsmt., 60x98 ft. brick hospital addn., alterations, $500,000. Joseph W. Hoover, 316 Penn Ave., Pittsburgh, archts. CD 3/14.

CONTRACTS AWARDED

▲ Ga., Atlanta—APARTMENTS—Wesley Heights Apartments, Co. contractor, 55 apartments, to Ramsey Constr. Co., 1661 DeKalb Ave. N. E., Approx. $1,000,000. CD 2/17.

Ill., Chicago—LIBRARY, etc.—University of Chicago, 57 and Cottage Grove Sts., Zone 15, 7 story library storage, 2 story service bldg., steel, concrete, brick, to Sumner G. Sollitt Co., 307 N. Michigan St., Zone 1, $850,000. Bids 6/29. CD 6/29.

Md., Baltimore—RESIDENCES, Greenway Homes, Inc., 1200 Fidelity Bldg., fifty-one 2 story, 24x30 ft. brick townhouse units, 1700 Block Edgewood Rd., near here, to Hampton Constr., Inc., 1200 Fidelity Bldg., $550,000.

▲ N. Y., Hudson—HOSPITAL—Columbia Memorial Hospital, Hudson, 4 story hospital addn., to William L. Crow Constr. Co., 101 Park Ave., New York, Zone 17, Approx. $2,000,000. Bids 5/18. CD 5/4.

O., Shaker Heights—HOMES—L. M. Sonderson, 13124 Shaker Square, seventeen 2 story, bsmt., brick, stone homes, W. Boulevard, Fairhaven Rds., separate contracts, $500,000. Borrows, Hurman & Gutbier, 1622 Lee Rd., Cleveland, archts.

Tex., Houston—DWELLINGS—W. C. Perkins, 701 Gulf Bank Bldg., 96 frame, cedar shake dwellings, in area S. Main airport. Owner builds. Approx. $985,000.

INDUSTRIAL BUILDINGS

BIDS ASKED

▲ Pa., Pittsburgh—PLANT—B.A. 8/1—Reick McJunkin Dairy Co., 1345 Forbes St., 1 and 2 story bsmt., 217x241 ft. brick block ice cream plant, $1,500,000. Stahlmer & Zelone, 175 Main St., White Plains, N. Y., archts. CD 6/2.

LOW BIDDERS

Tex., Houston—AUTO SERVICE etc.—Downtown Chevrolet Co., 1450 McKinney St., July 6, auto service, shop taxes from Southwestern Constr. Co., P. O. Box 1234, $296,000. Est. $245,000. CD 6/30.

CONTRACTS AWARDED

D. C., Wash.—PARKING GARAGE—Parking Services, Inc., 1414 I St., N. W., 10 story 75x91 ft. automatic parking garage 130 ft. high with 2 automatic elevators, to Jeffress-Dyer, Inc., 908 20 St. N. W., $200,000. Awarded 7/5. CD 4/14.

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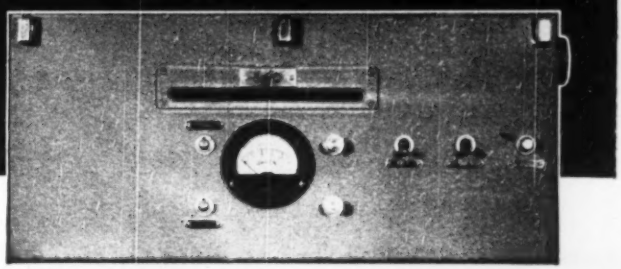

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BIDS ASKED

California—TRAFFIC SIGNAL SYSTEM, etc.—B.A. 8/10—State Div. Hys., 120 S. Spring St., Los Angeles, traffic signal sys., incl. hy. lighting on Manchester Ave. between Lincoln Ave. and Los Angeles St., Orange Co.; G. T. McCoy, Sacramento, state hy. engr.

† California—ELECTRICAL EQUIP., etc.—B.A. 6/21—Bureau of Reclamation, Bldg. 1-A, Denver Federal Center, Denver, Col., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Herdlyn, optional outdoor power circuit breakers, selector-type disconnecting switches, manually-gang-operated grounding blades, outdoor disconnecting switches, for Tracy Switchyard Central Valley Proj., Spec. 3124, L. N. McClellan, Denver, Colo., ch. engr.

LOW BIDDERS

† Missouri—PUBLIC OVERLOOK AND COMFORT STATION—U. S. Engr., P.O. Box 97, Memphis 2, Tenn., received bids June 6, tile, stucco 1,825 sq. ft. public overlook and comfort station on parking area immediately southeast of gate structure for Wappapello Dam, approx. 17 mi. northeast of Poplar Bluff. CIVENG 40-041-50-151. Will re-advertise. CD 5/10, under Public Bldgs.

† Nebraska—TRANSMISSION LINES—Bureau Reclamation, Dept. Interior, Casper, July 6, 69 mi. Sidney-Ogallala 115 kv. transmission line, Spec. 3092, Missouri River Basin Proj., Transmission Div., from R. N. Gregory Constr. Co., 2520 Leyden St., Denver, Colo., $432,694. Est. $473,988. CD 6/12.

South Carolina—RURAL DISTRIBUTION LINES—Little River Electric Co-operative, Abbeville, 20.22 mi. conversions two 44 kv. sub-stations Abbeville, Anderson and McCormick Counties from Alrich Electric Co., Augusta, Ga. $93,094. CD 6/26.

Texas—HEADQUARTERS FACILITIES—Brazos River Transmission Electric Co-operative, Waco, July 6, 2 story, 46x90 ft. headquarters facilities, maintenance and storage bldg. from Lake Limestone, Col., Box 2525, Waco. $110,200. Est. $250,000. Harris & Roberts, 1106 Medical Arts Bldg., Waco, engrs. CD 5/29.

† Va., St. Juliens Creek—DOCK IMPRVS.—Pub. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, repairs to deck Dock 2 at Naval Ammunition Depot, NOY21649. Spec. 23672, from W. F. Magann Corp., 2420 High St., Portsmouth. $57,977.

CONTRACTS AWARDED

Missouri—RURAL DISTRIBUTION LINES—Osage Valley Electric Co-operative, Butler, 257.2 mi. rural distr. lines, 51.34 mi. conversion and re-in Bates, Cass, Henry and Johnson Counties from Pub. No. 57 P. Bates to H. R. & W. Electric Co-op., Woodward, Okla. $107,721. Bids 4/20. CD 6/29.

Okla., Ardmore—TRUNK LINE—Ben Franklin Refining Co., Ardmore, crude oil trunk line to connect 4 oil wells to main line, Prescott and Frye. Approx. $85,000.

Wash., Factoria—DRIVE-IN THEATER—Sterling Theatres, Inc., Pioneer Bldg., Seattle, Zone 1, drive-in theater to Henn & Nuridick, 214 Alaska St., Seattle. Approx. $250,000. CD 6/7.

PROPOSED PROJECTS

WATER SUPPLY

▲ N. C., Asheville—City, J. C. Walker, city engr. Reservoir. $3,000,000. CD 6/12-47.

O., Wauseon—Village, WW-improvs. incl. reservoir, tank and water mains to village from reservoir, lateral Fo. Indiana, pump, equip. and exten. water mains, etc. $528,000.

Tex., Angleton—Brazoria County Navigation Dist.; Board of Trustees, Angleton, fresh water reservoir for supply to ship channel, industry line to receiving water at Brazosport, new dock. $150,000.

Tex., Houston—W. C. Robertson, Trustee for Owners, 1217 Rusk St., water from Trinity River, 60 acre tract. $40,000; water lines, facilities, 80 acre tract. $40,000; water line, 310 acre site. $65,000. All items along between Chocolate Bayou and Mykawa Rds.

Wash., Midway—Water, $1,000. Midway, voted bond; water distr. sys. $180,000. General Eng. Co., Central Bldg., Seattle, Zone 4, consult. engr. CD 6/23.

SEWERS, WASTE DISPOSAL

▲ Ark., Blytheville—City, sewerage sys. $1,322,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., consult. engrs.

Colo., Louisville—Town, sewerage sys., incl. sewage treatment plant, outfall sewage to Coal Creek and appurtenant wks. $156,800. Damon Runyan, Longmont, engr. and archt.

Ill., Rosiclare—City, c/o Mayor P. E. Howard, City Hall, sewage disposal, equip. and appurtenances, sewer exten., improvs. $185,000. Miller Eng. Service, 714 E. Main St., Streator, consult. engr. CD 6/10.

▲ Ky., Louisville—Metropolitan Sewer Dist., 428 W. Jefferson St., open cut sewer Shelley St. from Goss Ave. to Runnels. $1,500,000; open cut sewer 15 St. $400,000. S. S. Vance, c/o owner, ch. engr. CD 4/21-58.

La., Houma—City, Leon Gary, mayor, installing concrete storm sewers over city, not now served, incl.

brick manholes, constr. inlets in open ditches, $367,200. S. Allen Munson, 865 Wood St., consult. engr.

Minn., Anoka—City, C. R. Johnson, clk.-mgr., sewage treatment plant to serve municipality and State Hospital, $150,000. Toltz, King & Day, 1509 Pioneer Bldg., St. Paul, consult. engrs. CD 1-14-44.

Minn., Lake Crystal—Village, J. T. Wiger, clk., voted $120,000 bonds, sewage disposal plant. Toltz, King & Day, 1509 Pioneer Bldg., St. Paul, consult. engrs. CD 2-2.

N. J., Butler—Pequanoc Rubber Co., Butler, purification sys., $200,000.

O., Blanchester—Village, sewage disposal sys., $410,000.

Tex., Houston—Meadowcreek Addn., Galveston Rd., sanitary sewers, $100,000; storm sewers, $80,000, near here.

Tex., Houston—W. E. Robertson, Trustee for Owner, 1537 Gardenia St., sanitary sewer, $75,000, and storm sewers $65,000, on 330 acre site; sanitary sewers $50,000 and storm sewers, $50,000 on 80 acre tract; sanitary sewers, $55,000 and storm sewers, $50,000, on 85 acre tract, all foregoing between Chocolate Bayou and Mykawa Rds.

Tex., Mesquite—W. P. Luse & Assoc., Magnolia Bldg., Dallas, sewage disposal plant and lines, $60,000; storm sewers, $50,000, 1400 acre tract off Scyene Rd., Pleasant Mound Community, near here.

Tex., Rosenberg—City, 16,000 lin. ft. sanitary sewer lines, disposal improvs., $130,000; sanitary sewer rehabilitation, $71,000. S. A. Russell, Rosenberg, city engr.

Wash., Bryn Mawr—Bryn Mawr-Lakeridge Sewer Dist., Bryn Mawr sewerage sys., $547,500. General Eng. Co., Central Bldg., Seattle, Zone 4, consult. engr. CD 2-13-45.

Wash., Seattle—Val-Vue Sewer Dist., c/o H. T. Halstad & Assocs., engrs., Smith Tower, defeated bonds, sewerage sys., $130,000. CD 6/5.

BRIDGES

Tex., Angleton—Brazoria County Navigation Dist., Brazosport, via Angleton, underpasses at Brazosport, near here, $100,000.

STREETS AND ROADS

Calif., Los Angeles—City Bd. P. Wks., City Hall, improv. Lemoy St. and Orion Ave. Improvt. Dist., $62,351; improv. Hubby St. and Noble Ave., improvt. Dist., $141,516. Lloyd Aldrich, Los Angeles, city engr.

Ia., Atlantic—Cass Co., improv. 19.1 mi. farm-to-market roads, 3 or more bridges, $477,989. H. A. Arthur, Atlantic, county engr. for bridges.

Neb., Republican City—City, street improvs., $105,727. Burkham Eng. Co., 1504 Dodge St., Omaha, consult. engr.

O., Cleveland—City, City Hall, Lakeside and E. 9th, bond election Nov., street openings and widenings, mostly housing, $750,000. J. C. Warnick, City engr. CD 4-7.

Oklahoma—State Hy. Dept., Oklahoma City.

Oklahoma Co.—1 mi. off U. S. 77 from Witcher Corner, north and west to Northeast 63rd and Eastern Ave., near Oklahoma City, $550,000. Sid R. Middleton, Oklahoma City, state engr.

▲ Okla., Tulsa—Tulsa Co., Tulsa, voted bonds, access highway, $1,500,000. W. R. Winters, city engr.; Geo. Engle, co. engr. CD 6-1.

Tex., Angleton—Brazoria County Navigation Dist., Brazosport, via Angleton, roads at Brazosport, $130,000.

Tex., Houston—W. E. Robertson, Trustee for Owner, 1537 Gardenia St., street constr. and paving, 80 acre tract, $60,000; street constr. and paving, 85 acre tract, $60,000; street constr. and paving, 330 acre tract, $100,000; all foregoing between Chocolate Bayou and Mykawa Rds.

Wash., Dayton—[illegible] Grading, grubbing, draining, surf. coating, 3.92 mi. Grassey Rd., $70,000; Gaines cutoff road to Thorne Hollow, 1.5 mi., $15,000; grading, draining, surf., 0.5 mi. Eagle Rd. to Gaines cutoff, $12,500; surfacing and oiling, 1.9 mi. Touchet Rd. to Wolfpeltz Mt. junction, $15,000; grading and surfacing, 4.5 mi. Dowdy Rd. from Smith Prairie Junction east, $35,000. C. A. Winnett, co. engr.

EARTHWORK, WATERWAYS

Tex., Angleton—Brazoria County Navigation Dist., Brazosport, via Angleton, open drainage, $30,000; dredging, $200,000; levees, $120,000 at Brazosport, near here.

AIRPORTS

Wis., Madison—ADMINISTRATION—City, plans by John J. Flad & Assocs., 208 W. Johnson St., 1, 2 and 3 story, 60x207 ft., steel, brick, glass admin. bldg. at airport, $381,460.

LATIN AMERICA

Mexico, Mexico City—Emilio Azcarraga, Insurgentes, 1435 Mexico D. F., plans three 2,500 seat television theaters, $1,250,000.

Mexico, Mexico City—D. del D. F., Palacio Municipal Mexico D. F., 40,000 head capacity meat refrigerator, $1,125,000.

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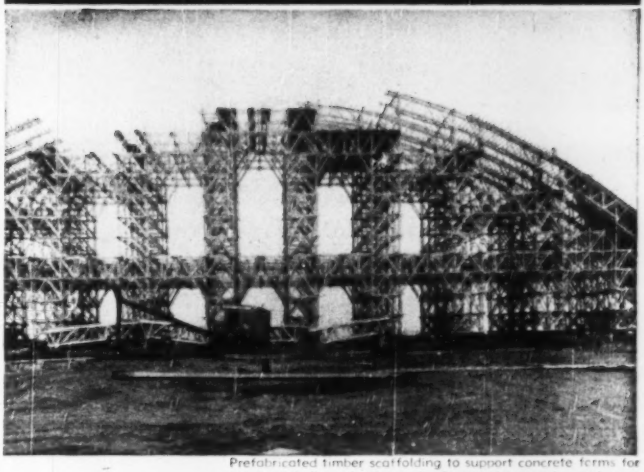

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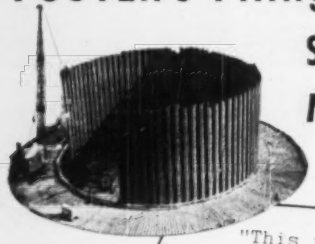

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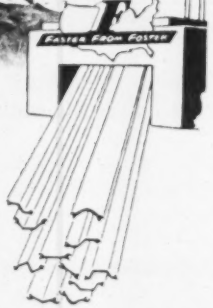

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Mexico, Mexico City—Articulos Mundet Para Embotelladores, S. A., Sabino, 329 Mexico, D. F., plans fruit concentrates factory, $250,000.

Mexico, Mexico City—Perfiles y Molduras, S. A., Juarez 99, Mexico, D. F., plans iron-steel pipes factory, $500,000.

Mexico, Mexico City—Refrescos Pascual, S. A., Insurgentes 286, Mexico, D. F., plans fruit concentrates factory, $250,000.

Mexico, Mexico City—Carlos Pule, San Juan de Letran e. 324, Mexico, D. F., plans 8 story office-store-auto parking bldg, $350,000.

Paraguay, Asuncion—Republic of Paraguay, Asuncion, plans concrete, steel, stone ministry of finance bldg. Approx. $1,500,000.

PUBLIC BUILDINGS

Ala., Birmingham—SCHOOL—City Bd. Educ., City Hall, 12 St., Negro High School, $400,000.

▲ Calif., Chula Vista—SCHOOLS—Chula Vista City School Dist., Chula Vista, 4 schools and 5 school addns., $2,093,870.

▲ Calif., Fresno—SCHOOLS—Fresno City Unified School Dist., Fresno, voted $9,925,000 bonds for schools, incl. 2 Junior High Schools, Senior High and Elementary Schools. CD 4/28.

▲ Calif., Pittsburg—SCHOOLS—Pittsburg City School Dist., Pittsburg, voted $1,500,000 bonds for schools, incl. high school addns., $459,050; and elementary school $421,000, etc. CD 5/2.

Calif., Riverside—SCHOOL, etc.—Palo Verde Unified School Dist., Riverside, classroom bldg., auto shop, general shop, cor-cuiture bldg., and office, $404,097.

▲ Conn., New Britain—CITY BD. EDUC., 2 story, basmt., brick, steel school, $500,000; 2 story, basmt. brick, steel school, $500,000; brick steel school, $450,000.

Ga., Calhoun—HOSPITAL—Gordon Co., Calhoun, plans by Bothwell & Nash, 206 Bothwell St., Marietta, hospital, $477,000. CD 8/15/48.

▲ Ill., Cicero—SCHOOL—Town, School Dist. 99, 51.0 W. 24 St., plans by Perkins & Will, 309 W. Jackson St., Chicago, Zone 6, school, $1,000,000.

Ill., Gibson City—HOSPITAL—Gibson City Hospital Bd., Gibson City, hospital, Approx. $500,000. CD 11/24/48.

▲ Ill., Hinsdale—HOSPITAL—Hinsdale Sanitarium & Hospital, 120 N. Oak St., plans by Fugard, Burt & Wilkinson, 520 N. Michigan St., Chicago, Zone 11, 160 bed hospital, $2,500,000. CD 2/17.

Ill., Marion—HOSPITAL—Marion Memorial Hospital, John E. Coles, pres. Hospital Bd., Marion, plans by Wm. B. Ittner, Inc., 408 Bd. Educ. Bldg., 911 Locust St., St. Louis 1, Mo., concrete, brick, steel general hospital, 50-bed capacity, $900,000. CD 3/20.

Ill., Villa Park—SCHOOL—School Dist. 45, 338 S. Michigan St., plans by Berger Feiley & Samuelson, Champaign, 1 story high school, $500,000.

Kan., Larned—SCHOOLS—Bd. Educ., Larned, voted bonds, June 30, high school, $450,000; elementary school, $250,000.

Kan., Olathe—COURT HOUSE, etc.—Johnson Co., Olathe, revised plans by Glover & Newcomb, 4101 Huntoon St., Topeka, court house and jail, $485,000. CD 1/13.

Kan., Plainville—SCHOOL—Bd. Educ., Plainville, plans by Glenn Beradon, Farmers & Bankers Bldg., Wichita, high school, $475,000.

▲ Ky., Louisville—HOUSING—Municipal Housing Comm., 2 and 3rd Sts., plans by Fred Juettner, McDowells Bldg., 450 negro public apartment housing, Wilson St. and Young Ave., $6,296,026. Louis & Henry Starks Bldg., consult. engrs. CD 2/9.

Md., Annapolis—HOUSING—City of Annapolis Housing Auth., 89 College Ave., plans by Rogers & Taliaferro, 49 College Ave., multiple story, brick, redwood, 85-unit housing, $700,000. CD 12/4.

▲ Md., Baltimore—HOUSING—City of Baltimore Housing Auth., Oliver C. Winston, dir., 709 E. Lager St., 400-unit, white housing, 4 acre site, $3,400,000.

▲ Md., Baltimore—HOUSING—City of Baltimore Housing Auth., Oliver C. Winston, dir., 709 E. Lager St., 450 dpt. colored housing, 14 acre site, N. E. of Fayette and Colvin Sts., $5,525,000.

▲ Md., Baltimore—SCHOOL—City Bureau of Bldg. Constr., 410 Municipal Bldg., plans by Wm. F. Stone, 2612 N. Charles St., 2 and 3 story, 468x300 ft., brick, stone, rein.-con., steel school, Bentalou and Presstman Sts., $1,250,000. CD 2/7/45.

▲ Mass., Boston—HOUSING—City of Boston Housing Auth., 230 Congress St., plans by Somes, Griswold, Bryden, Wylde & Ames, 53 State St., 2 and 3 story, basmt. brick, 261 family unit housing, Washington and Beech Sts., West Roxbury, $2,650,000.

▲ Mass., Boston—OFFICE—City, P. Welfare Dpt. & Park Dpt., plans by John M. Corry Co., 175 High St., Boston, combined Welfare & Park Dpt. Dist. office bldg., Roxbury, Approx. $1,000,000.

Mass., Swansea—SCHOOL—Town of Swansea Bldg. Comm., Swansea, plans by I. T. Almy, 56 N. Main St., Fall River, 1 story, 15-classroom Case Junior High School, $700,000.

Minn., Willmar—SCHOOL—Bd. Educ., A. M. Winness, supt. schools, plans by Magney, Tusler & Setter, 202 Foshay Tower, Minneapolis, and Field & Lofstrom, assoc. archts., Willmar, 1 story, 84x284 ft. school, $400,000; 1 story, 46x250 ft. school addn., 2 story, 146x114 ft. high school addn. Approx. $750,000 bonds voted. CD 3/28.

Miss., Decatur—HOSPITAL—Newton Co., plans by L. L. Brasfield, Kloder Bldg., Meridian, hospital addn. $600,000.

Miss., Kosciusko—PLANT—City, voted bonds mfg. plant, $650,000. CD 6/16

▲ O., Cleveland—POLICE STATION, etc.—City, City Hall, Lakeside and E. 5th., bond election Nov. 7. Second District Police Station $600,000. Fifth District Police Station, $650,000; 7 brick, stone, steel various sized fire stations, $1,650,000; motor vehicle maintenance bldg., $1,000,000. J. C. Wenrich, city engr. CD 11/22.

▲ O., Lakewood—GYMNASIUM—Bd. Educ., Warren Rd. Zone 7; plans by Conrad, Hayes, Simpson & Ruth, Arena Bldg., Cleveland, gymnasium, 4 swimming and locker rooms, Burns Rd. and Evans in Bay, $1,000,000.

▲ O., Niles—SCHOOLS—Bd. Educ., S. R. Bonsall, supt., N. Main and Leonard, and vocational education plant, $1,200,000; Lincoln School, $250,000; Jackson School, $250,000; Monroe School, $250,000. CD 11/14/49.

Okla., Noran—CHEMISTRY—Bd. Affairs, Capitol, Oklahoma City, Zone 5, plans by Conton & Forehand, Apco Tower Bldg., Oklahoma City, chemistry bldg. at University of Oklahoma, $400,000.

▲ Okla., Norman—AUDITORIUM—University of Oklahoma, N. Jenkins; plans by Maurice Hefley, 2812 N. W. 17 St., Oklahoma City, Zone 7, law school addn., $250,000; plans by Hudgins, Thompson & Ball, 1100 W. Main St., Oklahoma City, assembly bldg., $450,000; plans by Conton & Forehand, Apco Tower, Oklahoma City, physics bldg., $400,000.

R. I., Newport—WELLINGTON, U. S. Esq., First Naval Dist., 495 Summer St., Boston, Mass., 20 unit frame dwellings, $500,000.

Tex., Angleton—WAREHOUSE—Brazoria County Navigation Dist., Brazosport, 4-6 addition warehousing at Brazosport, near here, $500,000.

▲ Tex., Denton—DORM. (5 units), etc.—North Texas State College; dorms, plans by Wilson & Putterson, Majestic Bldg., Fort Worth, No. 1, 3 story masonry men's dormitory, concrete pier and beam foundation, $400,000; No. 2, 3 story masonry mens dormitory, concrete pier and beam foundation, $425,000; masonry dining hall, $250,000; 3 story masonry women's dormitory, concrete pier and beam foundation, $450,000. CD 7/21/49.

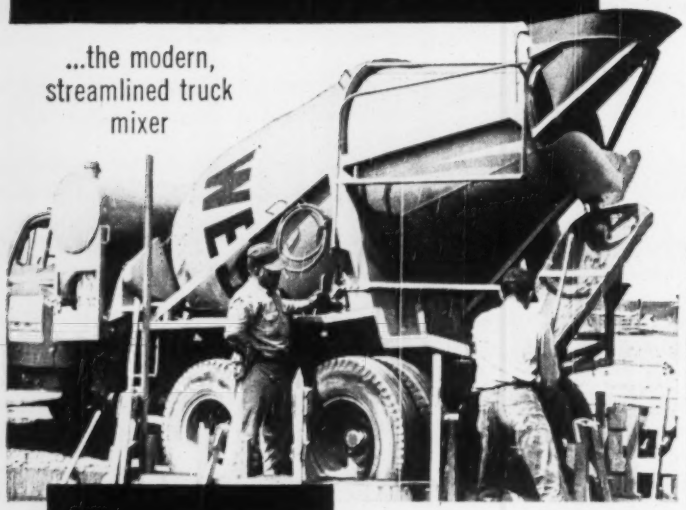
▲ Tex., Houston—ENGINEERING, etc.—State University for Negroes, 3200 Wheeler Ave.; plans by Lanza G. Ott, 2101 Crawford St., 4 story, 100,000 sq. ft. floor space masonry type engineering building, $1,000,000; 4 story, 100,000 sq. ft. floor space masonry type women's dormitory, $1,000,000; 3 story, 50,000 sq. ft. floor space masonry dining hall, $450,000. CD 2/11/49.

▲ Alta., Edmonton—LABORATORIES, etc.—University of Alberta, Extension, Agricultural and Biological Laboratories, Dairy Bldg., Administration and Power Station, $3,000,000. CD 5/5/50.

▲ N. S., Halifax—HOSPITAL—Province of Nova Scotia, Commissioner of Public Works & Mines, Province Bldg., Halifax, 234 bedroom, 4 story, 234 bedroom, 4 story, 234 bedroom, 4 story, 100 bedroom, 4 story, 100 bedroom, 4 story, 100

CHALLENGE

...the modern, streamlined truck mixer



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It's the cost per foundation, not the cost per yard of concrete. That's the way contractors figure today. And contractors, like A. B. Lang, prefer to have concrete delivered in Challenge Mixers.

These modern, streamlined mixers carry as much as 25% more concrete per load . . . 3 Challenge Mixers carry as much as 4 ordinary mixers of similar size. They are exceptionally easy to maneuver between and around building forms, foundations, etc.; and, because of the conveniently located controls, they are much easier and faster to discharge.

Take advantage of greater capacity and faster operation when you order ready-mixed concrete, have it delivered in a Challenge Mixer.

The above statement was made by A. B. Lang, one of Southern California's leading cement contractors, while placing foundations on a large housing project.

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O., Dayton—HOSPITAL: Glenview Hospital, Robert Casey, pres., Bd., c/o W. Ray Yount, archt., 319 Third Natl. Bldg., 60 bed hospital addn. $450,000.

Okla., Oklahoma City—OFFICE—C. R. Anthony Co., Braniff Bldg., plans by Sorey, Hill & Sorey, 609 N. W. 10 St., office, 2 and basement, $400,000.

Pa., Phila.—HOSPITAL: Jefferson Hospital, 10 and Walnut Sts., (Phila.), owner to receive bids in near future, hospital expansion. Approx. $750,000. CD 2-24-47.

▲ Pa., Phila.—OFFICE: Penna. Lumbermen's Mutual Fire Insurance Co., Market St. National Bank, plans by George Dudley, 2224 Delancey St., office 2-3 and terrace, $1,000,000.

▲ Pa., West Reading—STORE CENTER: Penn Realty Corp., Wyomissing, Pa., plans by Howard Haas, Jr. and Bldg., Phila., store center and shopping center, $1,500,000.

▲ Tex., Dallas—DWELLINGS: H. Leslie Holt, 4343 E. Lovers Lane, 2,000 dwellings, $8,000,000.

▲ Tex., Mesquite—DWELLINGS: W. P. Lyon & Assoc., Magnolia Bldg., Dallas, and Frame Type Dwellings, concrete post off Scyene Rd., $1,750,000. 250 frame dwellings, concrete beam foundations, east of Pleasant Grove Community, $1,250,000. near here.

Tex., San Antonio—SHOPPING CENTER: L. J. Burke & Sons, 4220 S. Zarzamora St., plans by Bartlett Cocke, 3501 Broadway, addn., 49,000 sq. ft. masonry shopping center, concrete pier and beam type, near WOW Hospital, $500,000. W. E. Simpson Co., Main Bldg., consult. engr.

▲ Va., Arlington—DEPARTMENT STORE: Heights, Co. c/o Abbott, Merkt & Co., archts., 10 E. 40 St., New York, N. Y., department store. Approx. $6,000,000. CD 4-18.

▲ Alta., Edmonton—HOSPITAL: Royal Alexandra Hospital Bd., Edmonton, maternity wing, nurses homes and laundry. Department of Public Works, Edmonton, engrs. $1,600,000.

▲ Ont., Hamilton—STORE: T. Eaton Co., Ltd., 190 Yonge St., Toronto, remodeling store and store addn., James St. North $2,500,000.

INDUSTRIAL BUILDINGS

Ala., Brewton—MILL: T. R. Miller Mill Co., c/o Rust Eng. Co., Eng. Exchange Bldg., Birmingham, rebuild, $750,000. CD 1-12.

Ill., Chicago—WAREHOUSE, etc.: Groceland Cooperative Service, 4140 W. 51 St., plans by Peter E. Conti, brick, 105 W. Madison St., 100,000 sq. ft. steel, concrete, brick warehouse and offices, $800,000.

▲ Kan., Wichita—PLANT: Gerity Oil Co., Wichita, cotton batting packing plant, $2,000,000.

Mass., Roxbury—WAREHOUSE: Henry Kanitzky, et al., 163 Southampton St., Boston, plans by Lester C. Gutin, 247 Washington St., Worcester, 5 story, 50,000 sq. ft., brick, steel, masonry warehouse, Cummings St. $300,000.

Mich., Adrian—FACTORY: Gerity Michigan Corp., Adrian, factory expansion, improvs. at Beecher St., $350,000.

▲ Mich., Lansing—PLANT: Oldsmobile Div., General Motors, Lansing, 325x508 ft., storage, altering axel plant, rebuilding railroad dock, $2,000,000.

▲ Miss., Hattiesburg—PLANT: Hercules Powder Co., Delaware Trust Bldg., Wilmington, texephine (insecticide) plant, $1,750,000.

Okla., Cleveland—PLATFORMING: Johnson Oil Refining Co., Cleveland, 1,800 bbl. capacity daily, platforming unit at existing refinery, $450,000.

Pa., Phila.—GARAGE: Owner c/o Albert M. Greenfield, Co., 1325 Walnut St., garage, $500,000.

▲ S. C., Gaffney—PLANT: Limestone Mfg. Co., Gaffney, plant addn. $1,200,000.

Wis., Milwaukee—FACTORY, etc.: Rexford Paper Co., 1715 Canal St., Zone 3, 1 story, part bsmnt., steel, concrete block factory and office bldg., $400,000. Lawrence Peterson & Assoc., 322 E. Wisconsin Ave., Zone 2, consult. engrs.

▲ Wis., Milwaukee—FACTORY: Western Electric Co., Inc., 1401 W. Clybourn St., Zone 3, factory. Approx. $1,000,000.

▲ Ont., London—FACTORY: General Motors Diesel Corp., H. Rippingille, mgr., Dundas Bldg., plans by Argonaut Div., General Motors Research Bldg., Detroit, Mich., U. S. A., 1 story, brick, steel, concrete, factory, $1,000,000. CD 3-30.

UNCLASSIFIED

California—RURAL DISTRIBUTION LINES: Surprise Valley Electrification Corp., Alturas, 85 mi. rural distr. lines, 22 mi. transmission lines, sys. improvs., Modoc Co. $330,000.

Conn., Wallingford—TOLL STATION: State, G. Albert Hill, state hy. comr., State Office Bldg., Hartford, toll station with 6 collection booths and administration bldg. at Interchange No. 15, Route 5 and Wilbur Cross Parkway, $125,000.

▲ Florida—RURAL DISTRIBUTION LINES: Clay Electric Co-operative, Keystone Heights, 432 mi. rural distr. lines, addtl. generating facilities, sys. improvs., Clay Co. $1,200,000.

Florida—RURAL DISTRIBUTION LINES: Lee County Electric Co-operative, Ft. Myers, 270 mi. rural distr. line sys. improvs., Lee Co. $475,000. CD 3-14-49.

Florida—RURAL DISTRIBUTION LINES: Withlacoochee River Electric Co-operative, Dade City, 96 mi. rural distr. lines, sys. improvs., Pasco Co. $325,000.

Georgia—RURAL DISTRIBUTION LINES: Cobb County Rural Electric Membership Co-operative, Marietta, 68 mi. rural distr. lines and sys. improvs., Cobb Co. $300,000.

Idaho—RURAL DISTRIBUTION LINES: Fraime Power Co-operative, Rexburg, 5 rural distr. lines, sys. improvs., Comm Co., $200,000. 176.5 mi. rural distr. lines, 43.5 mi. 33 kv. transmission lines, 2 substations, sys. improvs., Cassia Co., $670,000.

Indiana—RURAL DISTRIBUTION LINES: Noble County Rural Electric Membership Corp., Albion, sys. improvs., completing previously approved construction, Noble Co. $260,000.

Kansas—RURAL DISTRIBUTION LINES: Coffey Co. Rural Electric Co-operative, Burlington, 70 mi. rural distr. lines in Anderson, Coffee, Franklin, Greenwood and Woodson Counties, $225,000. Flora Eng. Co., 501 Jackson, Topeka, consult. engr.

Kansas—RURAL DISTRIBUTION LINES: Flint Hills Rural Electric Co-operative, Council Grove, 54 mi. rural distr. lines in Butler, Chase, Dickinson, Geary, Harvey, Lyon, Marion and McPherson Counties, $399,000. Frank Horton & Co., Lamar, Mo., consult. engrs.

Kansas—RURAL DISTRIBUTION LINES: Lane-Scott Electric Co-operative, Dighton, 410 mi. rural distr. lines in Lane and Scott Counties, $500,000. J. C. Canuts Co., Garden City, consult. engr. CD 4-17.

Kansas—CONVERSIONS, etc.: Victory Electric Co-operative Assn., Roy Marler, mgr., Dodge City, approx. 140 mi. single-phase and 21 mi. conversion, incl. single-phase about 112 taps or extensions in Ford, Edwards, Hodgeman and Kiowa Counties, $250,000. Frank Horton & Co., Lamar, Mo., consult. engrs.

▲ Maryland—NATURAL GAS PIPE LINE: Prince Georges Gas Corp., c/o Washington Gas Light Co., 11 and H Sts. N. W. Wash., D. C., plans completed, 20 mi. 20 in. welded steel natural gas pipe line, 65 Ft. R/W in Prince Georges and Montgomery Counties, $1,360,000.

Minnesota—RURAL DISTRIBUTION LINES: Aneka County Co-operative Light & Power Assoc., Aneka, 76 mi. rural distr. line, etc., Aneka Co. $275,000.

Minnesota—RURAL DISTRIBUTION LINES: Mille Lacs Region Co-operative Power & Light Assoc., Aitkin, 65 mi. rural distr. line, sys. improvs., Aitkin Co. $145,000.

▲ Mississippi—RURAL DISTRIBUTION LINES: North-central Electric Power Assoc., Senatobia, 637 mi. rural distr. lines, De Soto Co. $1,130,000.

Miss., Meridian Park—City, City Park at Bonita in eastern section of city, $300,000.

Missouri—GAS PIPE LINE: Associated Natural Gas Co., 24 N. Elwood St., Tulsa, Okla., 140 mi., 8-10-6 in. natural gas pipe line from Organ to Sikeston, and 22 mi. 6-5-4 in. line Sikeston to New Madrid, $934,000.

Missouri—RURAL DISTRIBUTION LINES: Co-Mo Electric Co-operative, Tipton, 287 mi. rural distr. lines, etc., Cooper Co. $565,000.

Montana—RURAL DISTRIBUTION LINES: Fergus Electric Co-operative, Lewistown, 112 mi. rural distr. line, sys. improvs., Fergus Co., $185,000.

Montana — RURAL DISTRIBUTION LINES—Glacier County Electric Co-operative, Cut Bank, 1200 mi. rural distr. lines, 30.5 mi. transmission line, headquarters facilities, etc., Glacier Co., $825,000.

Montana — RURAL DISTRIBUTION LINES—Goldenwest Elec. Cooperative, Wibaux, 89 mi. rural distr. lines, Wibaux Co., $150,000.

Montana — RURAL DISTRIBUTION LINES—Missoula Electric Co-operative, Missoula, 44 mi. rural distr. lines, headquarters facilities, Missoula Co., $190,000.

Montana — RURAL DISTRIBUTION LINES—Park Electric Cooperative, Livingston, 53 mi. of rural distr. lines, Park Co., $100,000.

Montana — RURAL DISTRIBUTION LINES—Tongue River Electric Co-operative, Terry, 485 mi. rural distr. lines, 49 kv. transmission line, etc., Custer Co., $825,000. CD 8/8.

Nebraska — RURAL DISTRIBUTION LINES—Commusker Rural Public Power Dist., Columbus, 444 mi. rural distr. lines, 14 mi. transmission line and sys. improvs., Commusker Co., $954,000.

North Carolina — RURAL DISTRIBUTION LINES—City of Greenville, Greenville, 424 mi. distr. line and sys. improvs., Greenville Co., $910,000.

Ohio — RURAL DISTRIBUTION LINES, etc.—Ohio Midland Light & Power Co., Cambridge, 37 mi. rural distr. lines, 28 mi. 44 kv. transmission line, 4 substations, garage and warehouse facilities and sys. improvs., Franklin Co., $750,000. CD 5/12/49.

O Jefferson — GRANDSTAND—Lions, Ashtabula Co., Ashtabula, plans by G. R. Lewis, Findlay, 3,000 seat grandstand, incl. kitchen, electrical and plumbing facilities, for county fairgrounds, $155,000.

▲ O Springfield — COLISEUM, etc.—Comrs., Clark Co., Courthouse, bond election and operating levee Nov. 7, coliseum-war memorial bldg., $1,000,000.

Oklahoma — RURAL DISTRIBUTION LINES—Northwestern Electric Co-operative, Woodward, 588 mi. rural distr. lines, Woodward Co., $475,000.

Okla., Britton — RADIO STATION, etc.—Oklahoma Publishing Co., 4 and Broadway, Oklahoma City, plans by Parr & Aderhold, Hales Bldg., Oklahoma City, WKY-TV radio station and tower, E. 89 St., east of here, $450,000.

Oregon — RURAL DISTRIBUTION LINES—Lane County Electric Co-operative, Eugene, 57 mi. rural distr. lines, headquarters facilities and sys. improvs., Eugene Co., $805,000. CD 1/16/48.

South Dakota — RURAL DISTRIBUTION LINES—Central Electric Co-operative Assn., Blunt, 281 mi. rural distr. lines and sys. improvs., Hughes Co., $387,000. CD 4/26/49.

▲ South Dakota — RURAL DISTRIBUTION LINES—Rosebud Electric Assn., Winner, rural distr. lines, sys. improvs. facilities, Tripp Co., $1,630,000. United Eng. Service, Kasota Bldg., Minneapolis, Minn., engrs.

S. D., Watertown — MUNICIPAL ARENA—City, municipal arena, $475,000. Scott Eng. Co., Watertown, consult. engr.

Tennessee — RURAL DISTRIBUTION LINES—City of La-Follette, La Follette, 156 mi. rural distr. lines and sys. improvs., La Follette Co., $578,000.

Texas — OIL LINE—Magnolia Pipe Line Co., Magnolia Bldg., Dallas, 47 mi. 12 in. crude oil loop lines on route between Eaton Station and Corsicana Texas Terminal, $650,000.

Texas — RURAL DISTRIBUTION LINES—North Plains Electric Co-operative, Perryton, 226 mi. rural distr. lines, sys. improvs., 66 mi., 69 kv. transmission lines, 20 mi. new tie lines, 2-way radio, etc., Ochiltree Co., $620,000.

Texas — RURAL DISTRIBUTION LINES—Rita Blanca Electric Co-operative, Dalhart, 242 mi. rural distr. lines, sys. improvs., Dallam Co., $160,000.

Texas — RURAL DISTRIBUTION LINES—Sam Houston Electric Co-operative, Livingston, 294 mi. rural distr. lines and sys. improvs., Polk Co., $790,000. CD 9/29/48.

▲ Tex., Angleton — RAILROADS, etc.—Brazoria County Navigation Dist., Brazosport via Angleton, railroads, $300,000; wharf or docks, $750,000 at Brazosport, near here.

Tex., College Station — COLISEUM — Agricultural & Mechanical College of Texas, College Station, plans by Carleton W. Adams, College Station, 5,000 seat multi-use coliseum, $510,000. CD 2/10.

Tex., San Antonio — PARK—City, City Hall, Military Plaza, site for new park on old Brackenridge tract, incl. 18-hole golf course, $100,000.

Washington — RURAL DISTRIBUTION LINES—Inland Empire Rural Electrification, Spokane, 212 mi. rural distr. lines and sys. improvs., Spokane Co., $285,000.

Washington — RURAL DISTRIBUTION LINES—Milton-Chesaw Electric Corp., Molson, 135 mi. rural distr. lines, Molson Co., $265,000.

Wyoming — RURAL DISTRIBUTION LINES—Bridger Valley Electric Assn., Mountain View, 237 mi. rural distr. lines, generating facilities, conversion and sys. improvs., completing previously approved constr., etc., Uinta Co., $960,000. T. C. Adams, Union Pacific Bldg. Annex, Salt Lake City, Utah, engr.

Wyoming — RURAL DISTRIBUTION LINES—Lower Valley Power & Light Co., Freedom, 65 mi. rural distr. lines, previously approved constr., and sys. improvs., Lincoln Co., $175,000. Horza Eng. Co., 401 Madison Ave., Chicago, Ill., consult. engr. CD 1/19/49.

Alaska — RURAL DISTRIBUTION LINES—Homer Electric Assn., Homer, 24 mi. rural distr. line and addnl. generating facilities, $360,000.

Our porter drank up a lot of dry goods!

(Based on Hartford Claim #140016)

We are a moderately-sized retail clothier and have never felt that our exposure to employee dishonesty was very great. Recently, however, our porter was caught in the act of stealing merchandise from the store. Investigation showed that he had been doing this for some time and, when the police searched his home, they found many garments still concealed there. He confessed that, in order to pay his bar bills, he had made a deal with a tavern keeper to take stolen goods in place of cash. His thefts would have cost us plenty except for a Hartford Fidelity Bond which we carried *just to be on the safe side!* Hartford paid our loss. In our opinion, this experience demonstrated that you can't tell how or where a fidelity loss will occur...and that it's good business practice to be protected against this risk.

• • •

How safe is *your* firm? High living costs, high taxes, heavy installment buying, etc. have produced another wave of employee dishonesty. Last year bonding companies incurred 9% more fidelity losses than in 1948 ...*proof that this type of crime is increasing!*

The Hartford offers employers of every size, in every field, Fidelity Bond protection to meet their individual needs. Your local Hartford agent or your insurance broker can provide full details. Call Western Union "Operator 25" for the name and address of your local Hartford representative, or write to the Company for an interesting booklet about dishonesty losses.

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CONSTRUCTION REPORTS-Second Section

WATER SUPPLY

BIDS ASKED

Conn., Willimantic—B.A. 8/1—Roger F. Paulenus, city clk., City Hall, prestressed concrete standpipe, impvg. reservoir, etc. Contr. 1. Plans deposit $20. Gibb & Hill, Inc., Pennsylvania Station, New York 1, N. Y., consult. engr. CD 1/22/47.

Wis., Dickeyville—B.A. 8/2—Village, deep well turbine pump, pumphouse, elevated tank and water mains. Plans deposit $15. Dixy Eng. Co., 502 Main St., LaCrosse, engr. CD 2/29/48.

R. I., Pembroke—B.A. 8/2—Town, 1 story, bunnit, 25x80 ft., brick, concrete block well house, incl. well chamber 9x16 ft., concrete const. Plans deposit $10. Metcalf & Eddy, 1400 Statler Bldg., Boston, Mass., engrs. CD 10/25/49.

N. J., Wanaque—B.A. 8/2—A. W. Guide, mayor and Wanaque Boro Council, Municipal Bldg., removing of existing filter material and replacing with new material from filter beds in Wanaque Boro, Passaic Co. Campbell & Ride, 109 Wanaque Ave., Pompton Lakes, engr.; adv. ENR 7/27.

Fla., Jacksonville—B.A. 8/3—City, City Hall, drilling, casing wells and installing pump equip. at Lake Shore Pump Station. Plans deposit $5. Reynolds, Smith & Hills, 227 Park St., Zone 1, engrs. CD 5/17/46.

Okla., Wagoner—B.A. 8/7—City, c/o City Clk., Wagoner, 7.5 mi. water main extens., incl. valves, hydrants, etc. $158,000. Plans deposit $25. Wood & Craig, Philtower Bldg., Tulsa, engrs. CD 3/28.

SEWERS, WASTE DISPOSAL

BIDS ASKED

Va., Fairfax—B.A. About 8/1—Fairfax Co., Courthouse, first phase of construction program, installing approx. 20 mi. 8-to-18-in. sanitary sewers, Groveton-Penn Daw-Wilton Woods-New Alexandria Area, Sanitary Dist. 1. G. Hubard Massey, Fairfax, consult. engr. CD 11/15/45.

▲ Minn., Rochester—B. A. 8/2—City, F. R. Finch, clk., sewage treatment plant. Plans deposit $40; sanitary trunk line sewer. Plans deposit $15. $1,500,000. Toltz, King & Day, 1509 Pioneer Bldg., St. Paul, engrs. CD 6/1.

▲ Tex., Fort Worth—B.A. 8/3—W. G. Jones, city engr., Fort Worth sewage treatment plant, imprvs., incl. filters, aeration, secondary and final clarifiers, sludge pump bldg., digestion tanks, etc. Contr. 1, Proj. 41.0-289. $1,750,000. Plans deposit $50. Freese & Nichols, 407 Dunciger Bldg., consult. engrs. CD 2/—/49.

Calif., Bryte—B.A. 8/4—Bryte Sanitary Dist., Bryte, sanitary sewer force main, $62,000. Plans deposit $15. Cerini Macatee, Palo Alto, engr.

Pa., Phila.—B.A. 8/4—Dept. of Public Property, Hall Annex, Southwest Main Gravity Intercepting Sewer, Part A, Contr. SD 128 SW, 5,260 lin. ft. 14 ft. diam., concrete sewer in rock tunnel; Part B, Contr. No. SD 1295W, 7,067 lin. ft. 12 ft. diam. concrete sewer in rock tunnel; Part C, Contr. No. SD 1305W, 5,176 lin. ft., 9 ft. and 6 ft. diam. concrete sewer in tunnel and monolithic sect. rein.-con. pipe, etc. T. Buckley, dir. CD 3/11/46.

Okla., Wagoner—B.A. 8/7—City, 6.5 mi. 8- to 15-in. sanitary sewers. $127,000. Plans deposit $25. Wood & Craig, Philtower Bldg., Tulsa, engrs. CD 3/28.

† La., Alexandria—B.A. 8/8—Veterans Munitions Bldg. Wash., D. C., sanitary sewers for Veterans Admin. hospital, Spec. 5012b. $65,000.

La., Jonesboro—B.A. 8/8—City Council, approx. 2,500 lin. ft. 8 in. gravity sanitary sewer lines in Tumbo and Area. Plans deposit $5. Pan American Engineers, 1418 Third St., Alexandria, engrs.

Tex., Dallas—B.A. 8/8—City, City Hall, Main and Harwood Sts., 7 ft. sanitary sewer line from Four Park Sewage Pumping Station to new water plant near Carrollton, $260,000; exten. sanitary sewer line 17 ft. to site of newly proposed sewage plant (part of Big White Rock Sewer Proj.); addl. new plant near Carrollton, $200,000. Myers & Noyes, Tower Petroleum Bldg., engrs. CD 6/26.

LOW BIDDERS

▲ Tennessee and Virginia—Cities of Bristol, Tenn. and Bristol, Va., July 11, sanitary sewer impvs., Div. 1, from Broch Constr. Co., Bristol, Va., $700,253. Div. 2, Rust Bldg. Const., 805 8 Ave. N., Nashville, Tenn., $1,134,236. CD 6/14.

▲ R. I., Providence—State of Rhode Island, Blackstone Valley Sewer Dist., William J. Halloran, chm., 238 State St., sewage disposal plant, treatment facilities, chlorination bldg., sludge pump station, gas control, grit screen and sludge bldg., sludge control, etc., Bucklin Point, to F. H. McGraw & Co., 750 Windsor St., Hartford, Conn., $2,847,000. Bids 6/9. CD 6/14, under LB.

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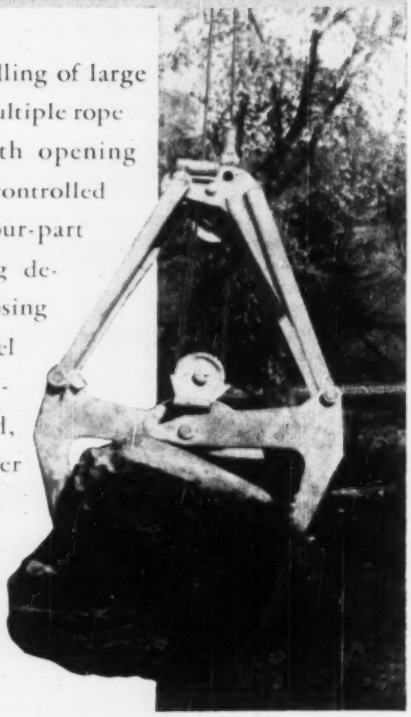


BRIDGES

BIDS ASKED

STATE HIGHWAY LETTINGS

August 1	Wisconsin
Iowa	August 9
New Jersey	California
August 8	Louisiana
Maryland	August 15
New Jersey	Maryland
Oklahoma	Texas

New Jersey—B.A. 8/1—New Jersey Turnpike Auth., War Memorial Bldg., Trenton.

Bergen Co.—Contr. 50, substructure and superstructure of N. Y., Susquehanna & Western R. R. and N. Y. Central R. R. overpass, etc., Ridgefield, Howard Needles, Tammen & Bergendoff, 55 Liberty St., New York, N. Y., engrs.

Union Co.—Contr. 44, superstructures, 14 bridges and for one viaduct to be placed upon abutments and piers which will be const. under Contr. 41, 42 and 43, and other incidental work in connection with contr. Turnpike between relocated Bayway Ave. and relocated Humboldt Ave. Plans deposit $5. Ammann & Whitney, 76 Ninth Ave., New York, Zone 11, N. Y., engrs. CD 4/14/49, under Streets and Roads.

La., New Orleans—B.A. 8/7—Union Passenger Terminal Comm., 501 S. Saratoga St., constr. S. Broad Ave. Drainage Canal Bridge. C. J. Wallace, 501 S. Saratoga St., engr. CD 2/4/49.

LOW BIDDERS

▲ New Jersey—New Jersey Turnpike Auth., War Memorial Bldg., Trenton, July 14, Contr. 38, 18 bridge structures, reconstr. and paving approach roads and grading, drainage on interchange area, Woodbridge Twp., Carteret and Linden, Middlesex and Union Counties, from Brown & Pruett Co., Broad St. Station Bldg., Phila., Pa., $4,648,393. CD 6/27.

▲ New Jersey—New Jersey Turnpike Auth., War Memorial Bldg., Trenton, July 18, Contr. 53, constr. 8 steel concrete bridge structures, cross street paving and incidental work in connection with constr. Sec. 2 of Turnpike, Woolwich, Hegins-Hartford, Gloucester, Camden and Burlington Counties, from Francis A. Canuso & Son, 804 S. 12 St., Phila., Pa. $1,470,113. CD 7/5.

CONTRACTS AWARDED

▲ New Jersey—New Jersey Turnpike Auth., War Memorial Bldg., Trenton, Contr. 54, constr. substructure and superstructures of Erie R. R. and county road overpass and other incidental work in connection with constr. New Jersey Turnpike, Secaucus, Hudson Co., to Peerless Constr. Co., 140 W. 42 St., New York, N. Y., $1,890,936. Bids 7/6, awarded 7/19. CD 7/20, under LB.

STREETS AND ROADS

BIDS ASKED

STATE HIGHWAY LETTINGS

August 1	August 9
Iowa	California
August 4	Louisiana
Minnesota	August 10
August 8	California
Maryland	August 15
New Jersey	Texas
Oklahoma	August 16
Wisconsin	Texas

La., Lake Charles—B.A. 8/2—City, City Hall, 39,760 sq. yd. C conc. pavement and 59,700 sq. ft. concrete sidewalks.

O., Dayton—B.A. 8/1—Comm., Montgomery Co., Jessie B. Gano, clk., Court House, bit. surf. tr. 24.98 mi. roads, T-32, $79,368. Carl A. Bauer, co. engr., CD 2/21/45.

Kan., Clifton—B.A. 8/3—City office of D. A. Bray, clk., Clifton, impvs. streets, incl. 12,840 lin. ft. curb and gutters, 2,000 sq. yd. special gutters, 620 lin. ft. storm sewer, etc. Plans deposit $10, $5 refundable. Wilson & Co., 225 N. Santa Fe St., Salina, engrs.

† Wash., Richland—B.A. 8/3—General Electric Co., prime contractor to Atomic Energy Comm. for operation of Richland and Hanford Works, let floating, patching 57,800 lin. ft. streets, reconstr. 7,000 lin. ft. streets, constr. 12,000 lin. ft. curb, gutter and installing storm drain. Plans deposit $50.

Tex., Colorado City—B.A. 8/7—City, Jack Tarver, mgr., Colorado City, constr. 240,000 sq. yd. resurf. of existing asphalt paving, $50,000. Plans deposit $25. Freese & Nichols, 407 Dunciger Bldg., Fort Worth, engrs. CD 4/17.

La., New Iberia—B.A. 8/7—City Council, approx. 21,000 sq. yd. C conc. pavement, etc. Plans deposit $20. Hon. M. Wuckel, New Iberia, engr.

Neb., Bancroft—B.A. 8/7—City, paving, $58,740. Hennigson, Eng. Co., Standard Oil Bldg., Omaha, engr.

Minn., Caledonia—B.A. 8/8—Houston Co., M. E. Conrad, clk., 175,547 sq. yd. surfacing A and T-952 type oil, incl. 8 mi. gravel, 1 mi. concrete box culvert, 176 lin. ft. concrete T-7 on between Houston limits of Brownsville T. H. 233 & T. H. 26 Hokah-Houston (SAP 1-Minn. Proj. S 200 (14), $60,000. Plans deposit $2. H. M. McLaird, Caledonia, co. hy. engr.

Minn., Park Rapids—B.A. 8/8—Hubbard Co., Vida M. Lewis, aud., approx. 36 mi. bit. seal coat roads, abt. 3 mi. at Nevis and Park Rapids Sts., 0.5 mi. road-mixed bit. wearing surf. also 36 blocks in Park Rapids, $50,000. R. A. Olson, co. hy. engr.

Tex., Mesquite—Bids Asked—Carl M. Brown, 1350 Buckner St., Dallas, street constr., paving, 150 acre tract northwest of here, $70,000.

CONTRACTS AWARDED

▲ Pennsylvania—Pennsylvania Turnpike Comm., 11 N. 6 St., Harrisburg, grading, drainage structures, paving 2.81 mi., Sect. 31-A, western extens. of Turnpike from point approx. 900 ft. east of Twp. Rd. 587 in Indiana Twp., easterly 14,835 ft., to right descending bank of Allegheny River, Harmar Twp., Allegheny Co. to Ralph Myers Contrg. Corp., Lemont, Ind., $2,679,011. Bids 6/20, awarded 7/13. CD 6/22, under LB.

▲ Pennsylvania—State Hy. and Bridge Auth., 406 N. Office Bldg., Harrisburg, construct divided highway consisting C conc. pavement variable 24 to 38 ft. wide on each side of a 4 ft. concrete divisor, incl. construction reinforced conc. arch constr. I-beam bridge and deck plate girder and I-beam bridge, incl. grading and drainage, 21.176 ft. L. R. 1, Sect. 10, Sec. 10, 902, T. R. 22, and T. 3, a section of Penn-Lincoln Parkway, West Allegheny Co., to Frank Machuda Co., Catasauqua, $1,886,101. Bids 6/30, awarded 7/27, CD 7/7, under LB.

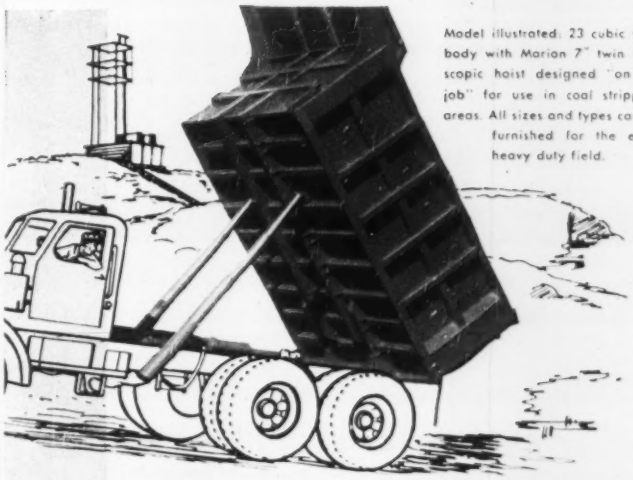
▲ Pennsylvania—State Hy. Dept., Harrisburg, 4.37 mi. distribution route for U. S. 230, T. R. 22, T. R. 401 and U. S. 222, from point north of Lancaster, consisting of 24 and 25 ft. wide reinforced on each side of a 4 ft. concrete divisor, also 3 reinforced conc. arch bridges, 1 reinforced conc. rigid frame bridge and constr. 3 three span concrete deck I-beam bridges, one over Oregon Pike (Rural Route 30051), one over Manheim Pike and one over Lititz Pike, Lancaster Co., to H. E. Williams Co., Inc., Summer St. and Western Md. R.R., York, $1,851,258; also 1 reinforced asymmetric arch bridge, 20 ft. wide, 0.07 mi. construct of reinforced conc. structures, one I-beam bridge and one reinforced bridge over Chesters Creek and branches, T.R. 13, in South Franklin and North Franklin Twps., Washington Co., to Dick Corporation, Box 7316, Pittsburgh, $546,889. Bids 6/30, CD 7/6, under LB.

EARTHWORK, WATERWAYS

BIDS ASKED

Massachusetts—B.A. 8/1—Commonwealth of Mass., Dpt. of Pub. Works, Boston, Chap. 740 relocation portion of Hoosac River, Cheshire. Plans deposit $5.

† Missouri and Nebraska—B.A. 8/1—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., constr. streamline, replacing 4,894 lin. ft. steel, reinforced slab, adjacent



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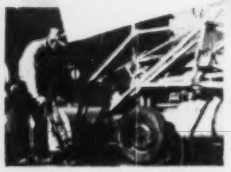

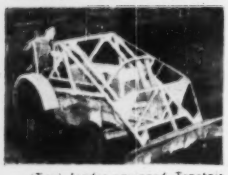

(Top) loader-equipped Tractair breaking asphalt with Le Roi CLEVELAND Air-Jac paving breakers

(Bottom) Loader with backfill blade attachment. Both photos show versatility of this unit.

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to Missouri River, in Lower Hemmies-Upper Rush Bottom Bends, Holt Co., Mo., and Richardson Co., Neb., CIVENG 25-0o6-51-2.

† Nebraska and Missouri—B.A. 8/3—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., strengthening, replacing approx. 4,600 lin. ft. dikes and revetment in or immediately adjacent to Missouri River, 27,400 lin. ft. piles, 28,950 tons quarry-run stone, Richardson Co., Neb., and in Upper Arago-Rulo Bends, Holt Co., Mo., (approx. 3 mi. upstream from Rulo, Neb., CIVENG 25-066-51-3.

† Pennsylvania—B.A. About 8/3—U. S. Eng., 121 N. Broad St., Phila., repairing local protective work at Weissport, on east side of Lehigh River, approx. 43 mi. upstream from confluence of Lehigh and Delaware Rivers at Easton, Serial No. CIVENG 36-109-51-2. Plans deposit $25.

† Missouri—B.A. 8/3—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., constr. Agricultural Levee Unit 400-L, left bank of Missouri River, Waldron, CIVENG 23-028-50-175.

† Missouri—B.A. 8/3—U. S. Eng., P. O. Box 97, Memphis 1, Tenn., repair rain and wave wash on levees in Lower St. Francis Levee Dist., 35,000 cu. yd. Levee Item No. R-841R New Madrid, 35,000 cu. yd. Levee Item No. R-842R Indian Mound, in New Madrid and Pemiscot Counties, CIVENG 40-041-51-2.

† Louisiana—B.A. 8/8—U. S. Eng., P.O. Box 60, Vicksburg, Miss., constr. Big and Colewa Creeks Channel Imprvt., Mile 69.69 to Mile 89.00 on Big and Colewa Creek, Richland and West Carroll Parishes, CIVENG 22-052-51-5.

† Washington—B. A. 8/8—Bureau Reclamation, Dpt. Interior, Bldg. 1 A, Denver Federal Center, Denver, Colo., furnishing del. f.o.b. cars shipping point or f.o.b. cars Othello, incl. two 16x12 ft. in. top seal radial gates for const. Crest Station 134 plus 52 with pin bearing 10 in. wall plates, gate sills, bottom plates, top bars and bottom bars; two 25,000 lb. motor-operated radial-gate hoist for concrete check, Station 134 plus 52, anchor bolts, pipe sleeves, etc. for Potholes East Canal, Columbia Basin Proj., Spec. 3122. L. N. McClellan, ch. engr.

CONTRACTS AWARDED

▲† California—Bureau Reclamation, Dpt. Interior, Goleta, Cachuma Dam on Santa Ynez River, Santa Barbara Co., Spec. 2064, to Mittry Constructors, Inc., 1801 San Fernando Rd., West Los Angeles, $6,722,520. Bids 7/6. CD 7/11, under LB.

▲† Ky., Louisville—U. S. Eng., 830 W. Broadway, Zone 2, 2 sewerage and drainage water pump plants Del Park Terrace, Shawnee Park and 27 St., to Central Constr. Co., Oshkosh, Wis., $1,541,189. Bids 6/16. CD 6/22, under LB.

AIRPORTS

BIDS ASKED

Ind., Fort Wayne—TERMINAL—B.A. 8/1—Bd. Aviation Comrs., terminal bldg., and adjacent site development work at Baer Field, Allen Co., near here. Plans deposit $20. A. M. Strauss, Inc., Strauss Bldg., ports engr. CD 4/5.

† Kan., Olathe—TANK FARM for OIL STORAGE—B.A. 8/7—Ninth Naval Dist., Great Lakes, Ill., tank farm for oil storage, incl. roads, fresh water piping, sewer and storm drainage sys., grading, earthwork, storage tanks, piping, frames, roofs at Naval Air Station.

† Fla., Cocoa—ROADS—B.A. 8/3—U. S. Eng., 575 Riverside Ave., Jacksonville, 1. roads in launching area, Long Range Proving Ground Div., U. S. Air Force, Serial No. Eng 08-123-51-2. Extended date CD 7/20.

CONTRACTS AWARDED

▲† Alaska, Cape Newenham—MILITARY INSTALLATION—U. S. Eng., APO 942, c/o PM, Seattle, Wash.; Anchorage military installation, Inv. 595-507-50-14, to Haddock Engineers, P. O. Box 1691, Santa Fe, N. M., $2,450,000. Bids 6/1. CD 6/15, under LB.

▲† Alaska, Takotna—MILITARY INSTALLATION—U. S. Eng., APO 942, c/o PM, Seattle, Wash.; Anchorage military installation, Inv. 549-507-50-17, to Haddock Engineers, Ltd., P. O. Box 1691, Santa Fe, N. M., $2,636,000. Bids 6/1. CD 6/6, under LB.

PUBLIC BUILDINGS

BIDS ASKED

Ala., Vernon—HOSPITAL—B.A. 8/1—Lamar Co., Vernon hosp. tul. $300,000, extended date. Wm. I. Rosmond, Jr., archt., Winfield, Ala. CD 8/15.

† N. Y., Brooklyn—CHAPEL—B.A. 8/1—Veterans Admin., Mgmtnent Bldg., Wash. 25, D. C., Room 1, Main Bldg., Long Island Veterans Admin. Hospital, Fort Hamilton, Spec. No. 51109.

O., Montpelier—HOSPITAL—B.A. 8/1—Williams County Joint Twp. hospital bd., Montpelier hospital, $900,000. Extended date. Bretsch & Mulger, Nicholas Bldg., Toledo, archts. CD 7/16.

Ont., Aurora (Q-405)—B.A. 8/1—S. B. Coon & Son, archts., 4 St. Thomas St., Toronto, 2 story, 67x216 ft. secondary school addn. to high school. Corner Aurora Ave. and High School Rd., Aurora. Approx. $450,000. Plans unpost. $25. CD 10/24/49.

▲ Conn., Bridgeport—HOUSING—B.A. After 8/1—Housing Auth., 252 Hallett St., housing, $2,500,000. Lindsey & Johnson, 211 State St., archts. CD 12/20.

Ga., Dahlonega—DORMITORY—B.A. B.2—Bd. Regents University System of Georgia, c/o Wm. J. J. Chase & Assocs., 140 Peachtree St., Atlanta, dormitory at North Georgia College. Plans deposit $50. Extended date. CD 7/7.

N. Y., Lakeview—SCHOOL—B.A. B.2—Bd. Educ., Union Free School Dist. 12, Malverne School addn., alterations, Windsor Rd. $450,000. Plans deposit $50; F. P. Wedersteen, 240 Rockaway Ave., Valley Stream, archt.

N. Y., Lynbrook—SCHOOL—B.A. B.2—Bd. Educ., Union Free School Dist. 12, Malverne school addn., Davidson Ave. $250,000. Plans deposit $50; F. P. Wedersteen, 240 Rockaway Ave., Valley Stream, archt.

N. Y., Malverne—SCHOOL—B.A. B.2—Bd. Educ., Union Free School Dist. 12, Malverne school addn., alterations, Linder Pl. $250,000. Plans deposit $50; F. P. Wedersteen, 240 Rockaway Ave., Valley Stream, archt.

N. Y., New York—SCHOOL—B.A. B.2—Supt. School Bldgs., Design & Construction, 49 Flatbush Ave. extension, Zone 1, general work, heating, plumbing and power, electrical work, electric wires and lighting fixtures for P. S. 222, Arion Ave. between Bolton and Throop Aves. Plans deposit $22 general constr., $6 plumbing and drainage, $6 heating and ventilating and electrical work and lighting fixtures. CD 3/4/48.

Pa., Laurelton—HOUSING—B.A. B.2—General State Auth., 18 and Herr Sts., Harrisburg, general contract, heating, plumbing, excavation, water for addn. housing for girl patients, 3 cottage-type units at Laurelton State Village. $150,000. Plans deposit $10 each; George S. Ittel, 117 S. 17 St., Phila., Zone 3, archt.; A. F. Jones, c/o owner, ch. engr. CD 11/28.

Pa., Rockview—KITCHEN, etc.—B.A. B.2—General State Auth., 18 and Herr Sts., Harrisburg, general contract, heating, plumbing, electrical, elevators for relocation kitchen, refrigeration and related facilities at New Western State Penitentiary. $400,000. Plans deposit $10 each; Peter F. Loftus, Comr., 1st Natl. Bank Bldg., Pittsburgh, Zone 22, archts.; A. F. Jones, c/o owner, ch. engr. CD 11/3/47.

Wash., Seattle—SCHOOL—B.A. B.2—Shoreline School Dist. 412, N. 155 St. and Roosevelt Way, Zone 22, masonry school 1st Route. $400,000. masonry primary school at Viewlands, north of here, $200,000. Mailis, DeHart Hoskins, Lyon Bldg., Zone 4, archts. CD 3/17/48.

Ala., Birmingham—SCHOOL—B.A. B.3—City Bd. Educ., City Hall; Bellview Heights School, Warren, Knight & Davis, Protective Life Bldg., archts. CD 8/20/44.

† Arizona and Nevada—SHOP, etc.—B.A. B.3—Bureau Reclamation, Dist. Interior, Boulder City, Nev., concrete blacksmith shop, altering power Nevada and Arizona railway landing platforms, and giving tourist at Hoover Dam, near Boulder City, Nev., Boulder Canyon Proj., Spec. No. R3-B-16; (Region 3), L. N. McClellan Bldg., 1-A, Denver Federal Center, Denver, Colo., ch. engr.

La., Jennings—SCHOOL—B.A. B.3—Jefferson Davis Parish School Bd., Jennings, high school, $500,000. Plans deposit $50; Barron, Heitberg & Brocato, Guaranty Bank Bldg., Alexandria, archts. Extended date. CD 4/18.

Minn., Mound—SCHOOL—B.A. B.3—Bd. Educ., Independent Consolidated Dist. 85, A. E. Johnson, Clk., 2 story, 24 classroom school, $600,000. Plans deposit $25; Hickly, Bliss & Moore, 1111 Nicollet Ave., Minneapolis, archts. CD 3/29.

▲ Wis., Oshkosh—HOSPITAL—B.A. B.3—Winnebago Co., Oshkosh 2 story, basmt., reinforcement, steel, brick, terra cotta or Bedford stone hospital, $1,900,000. Plans deposit $50; Auler Irion & Wertsch, 46 Washington Blvd., archts and engrs. CD 1/2/47.

▲ Mo., Jefferson City—STATE HOUSE—B.A. B.4—State, State Bd. P. Bldgs., House Lounge, State Capitol, 13 story, basmt., steel, glass block, aluminum, concrete, stone 210,000 sq. ft. floor space state office bldg., 71'x198 ft. on site 200'x200 ft., alternate bids on 11 story or 12 story on south side of Capitol Ave. at Jefferson St. Plans deposit $25; Mayer Ambassador Bldg., 411 N. 7 St., St. Louis, Zone 3, archt. CD 6/21.

Wis., Madison—SCHOOL—B.A. B.4—Bd. Educ., 351 W. Wilson St., 2 story, part basmt., Sherman School, $750,000. Plans deposit $15; L. J. Siber, 103 W. Main St., archt. CD 3/11/49.

▲ Ill., Ottumwa—SCHOOL—B.A. About B.5—Bd. Educ., Lenstrup, Smith, Secy., 2 story, 198 x 192 ft., brick, reinforcement, Junior High School, $1,250,000. Keffer & Jones, Masonic Temple Bldg., Des Moines, archts.

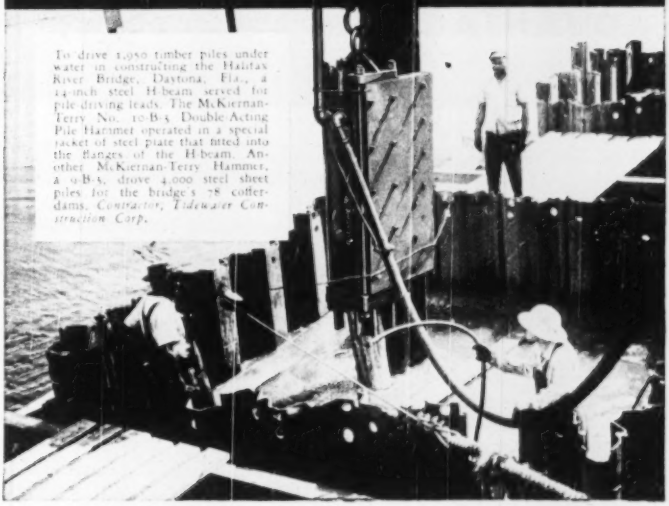
▲ Calif., Los Angeles—ARTS—B.A. B.5—Bd. Regents University of California, 405 Hilgard Ave., $3,000,000 U. of C. reinforcement, arts bldg., $3,000,000. Plans deposit $150; Paul Kirkpatrick Hunter, 635½ S. Figueroa St., archt. CD 1/27/49.

La., Lake Charles—LIBRARY—B.A. B.6—City, library, $400,000. Plans deposit $25; Staub & Barker, 615 J. A. Partridge Jr. Zone, Woolsey Bldg., archts. CD 2/17.

La., Winnsboro—COURTHOUSE and JAIL—B.A. B.6—Franklin Parish, Winnsboro, courthouse and jail, $500,000. Plans deposit $10. Extended date. Nelson Somdal Assocs., Texas Eastern Bldg., Shreveport, archts.

† Tenn., Oak Ridge—EXPERIMENTAL—B.A. B.8—U. S. Atomic Energy Comm., P. O. Box E, Attention: W. Dunlop, Engineering Div., Oak Ridge, construct experimental B.31, 3500 unit pertinent facilities, Inv. No. 491-61-A. CD 6/13/48.

DEPENDABLE POWER INGENIOUSLY HANDLED



To drive 1,050 timber piles under water in constructing the Halifax River Bridge, Daytona, Fla., a 14-inch steel H-beam served for pile-driving leads. The McKiernan-Terry No. 10-B-5 Double-Acting Pile Hammer operated in a special racket of steel plate that fitted into the flanges of the H-beam. Another McKiernan-Terry Hammer, a 9-B-5, drove 4,000 steel sheet piles for the bridge's 78 cofferdams. *Contractor, Tidewater Construction Corp.*

Necessity mothered the invention of this novel pile-driving procedure, for here were conditions where conventional pile driver leads could not be used.

Past experience with McKiernan-Terry Hammers occasioned the selection of these hammers for the job.

Power, dependability and safety of operation, demonstrated for over fifty years on pile-driving projects of every description, all over the world, have made McKiernan-Terry Pile Hammers the No. 1 choice of leading contractors and engineers. They can always secure in the standard McKiernan-Terry line of ten double-acting hammers, five single-acting hammers and two double-acting pile extractors a hammer or extractor powered for any specific requirements.

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Make—Size & Model of Machine

Tex., Dallas—SCHOOL—B.A. 8/8—Dallas Independent School Dist., Axard and Royal Sts., Urban Park School addn, $275,000. Plans deposit $25. Darnell & Welch, 2618 Cedar Springs Rd., archts. Mark Lemmon, 1210½ Main St., bd. archt. CD 10/6/49.

Tex., Dallas—SCHOOL—B.A. 8/8—Dallas Independent School Dist., Axard and Royal Sts., 2 story, brick, concrete, steel H. S. Thompson School (Negro), $350,000. Plans deposit $25. Wyatt C. Hedrick, 904 Fort Worth Ave., archt. Mark Lemmon, 1210½ Main St., consult. archt. CD 12/13/45.

Tex., New Braunfels — SCHOOLS—B. A. 8/8—New Braunfels Independent School Dist., New Braunfels, 45,000 sq. ft. Senior High School, and remodeling Schurz School, $250,000. Plans deposit $20. H. Keiser, 616 Austin Hy., San Antonio, archt. J. Schmidt, Box 249, supvg. archt. Bids 4/11 rejected, Senior high school, L. B. $150,275 Schurz School, L. B. $101,216. CD 3/27.

Tex., Stephenville—SCHOOL—B.A. 8/8— Stephenville Independent School Dist., Stephenville, school, $275,000. Plans deposit $15. Stanley Brown, 1905 N. Harwood St., Dallas, archt. CD 5/25.

LOW BIDDERS

▲ Calif., Tracy—INSTITUTION GROUP—State Div. Architecture, P. Wks. Bldg., Sacramento, July 11, general contract $30,000 sq. ft. main institution group, incl. rein. conc. cell bldgs., service bldg., roads, utilities, wood pile foundations at California Vocational Institution, from Johnson-Drake & Piper, Inc., 9009 San Leandro St., Oakland, $5,449,300 electrical work, from Collins Elec. Co., Box 879, Stockton, $518,400 plumbing, heating ventilating, refrigeration, from Cory & Joslyn, Inc., 509 Polk St., San Francisco, $1,304,867. CD 6/6.

▲ Fla., Tampa—COURT HOUSE—Hillsborough Co., July 14, court house, from Paul Smith Constr. Co., 310 N. Rome Ave., $2,388,700. CD 6/19.

▲ Pa., Scranton—HOUSING—Scranton Housing Auth., City Hall, and Penna. Agency of Public Housing Auth., 3701 N. Broad St., Phila., 240 dwelling units in 20th Ward, from John J. Johnson & Sons, 270 21 St., New York, N. Y., $1,523,000. CD 6/6.

CONTRACTS AWARDED

▲ Calif., Tracy—PRISON GROUP—State Div. Architecture, P. Wks. Bldg., Sacramento, general contract $30,000 sq. ft. main institution group, incl. rein. conc. cell bldgs., service bldg., roads, utilities, wood pile foundations at California Vocational Institution, near here, to Johnson-Drake & Piper, Inc., 9009 San Leandro St., Oakland, $5,449,300 electrical work, to Collins Elec. Co., Box 879, Stockton, $518,400 plumbing, to Lee D. Stice Co., 852 W. Doran St., Glendale, $596,000 heating, ventilating and refrigeration, to Cory & Joslyn, Inc., 509 Polk St., San Francisco, $623,380. Grand total $7,189,080. Bids 7/11. CD 7/18, under LB.

▲ N. Y., Great Neck—HIGH SCHOOL—Bd. Educ., Union Free School Dist. 7, Arrandale Ave., Junior High School, to Horace & Castagna, Inc., 1711 Sheepshead Bay Rd., Brooklyn, Zone 29, $2,183,708. Bids 6/6. CD 6/9, under LB.

▲† Alaska—MILITARY INSTALLATIONS—U. S. Eng., (APO 442, c/o PM, Seattle, Wash.) Anchorage, complete military installations known as Ransmoor, Wales and Lisburne Projects, Ransmoor, Prince of Wales and Lisburne, each consisting of bachelor officers quarters, NCO quarters, airmen's quarters, central heat and power plant, operations bldg., warehouse and cold storage, vehicle warm storage, mess hall, recreation bldg., dispensary and admin. bldg., POL station storage, outside utilities and roads, 595-507-50-18 to Dassinger Co., Bellingham, Wash. $8,835,000. Bids 6/20. CD 6/27, under LB.

▲ Alaska, Fort Richardson—BARRACKS—U. S. Eng., (APO 442, c/o PM, Seattle, Wash.) Anchorage, three 400-man barracks, S 96-507-50-25 to Haddock Engineers, Ltd., P. O. Box 1641, Santa Fe, N. M., $2,850,000; seven 200-man barracks, 595-507-50-26, to J. H. Pomeroy & Co., Inc., 433 Montgomery St., San Francisco, Calif., $2,749,000. Bids 6/15. CD 6/22, under LB.

COMMERCIAL BUILDINGS

BIDS ASKED

Va., Ashland—CLASSROOM—B.A. 7/31—Randolph Macon College, Ashland, classroom bldg., Merrill C. Lee, 110 N. 7 St., Richmond, archt. CD 10/20.

Pa., Phila.—CHURCH, etc.—B.A. 8/1—Harry G. Stewart, archt., 117 S. 17 St., church and community center for Mexican Lutheran Church, 6409 N. 6 St., $100,000. Sauter & Castor, 1411 Walnut St., engrs. CD 12/19.

Conn., Milford—HOSPITAL—B.A. 8/2—Milford Hospital, Inc., Bridgeport Turnpike, 3 story, brick, steel hospital addn., Bridgeport Turnpike, $900,000. Douglas Orr, 114 Whitney Ave., New Haven, archt. CD 10/1/46.

Ky., Lexington—HOSPITAL—B.A. 8/2—Good Samaritan Hospital, 2100 Bryan Station Rd., 5 story hospital addn., $250,000. Plans deposit $20. John Gilling, 180 Walnut St., archt. CD 2/15.

▲ N. Y., New York—OFFICE—B.A. 8/4—Skidmore, Owings & Merrill, archts., 57 St. and Park Ave., 23 story office, 378-88 Park Ave., on blockfront Park Ave. between 53 and 54 Sts., for Lever Bros., 80 Varick St., Zone 13, $1,500,000. Wallace K. Harrison, 345 W. 55 St., Zone 19, engrs. CD 4/28.

Ill., Chicago—OFFICE—Bids Asked—Illinois Bell Telephone Co., 65 E. South Water St., Zone 1, 2nd, 11th, 12th, 13th floors office remodeling, $230,000. Holabird, Root & Burgee, 180 N. Michigan St., Zone 1, archts.

Ind., Indianapolis—CONVENT—Bids Asked—Holy Trinity Parish, Rev. Edward Bucknold, 2618 W. St. Clair St., 26 room, 2 story basmt. brick convent, etc.

SOON LETS CONTRACT

▲ D. C., Wash.—OFFICES—Harvey Miller, archt., 700 13 St., N.W., soon lets contract 8 story, basmt. office for National Assoc. of Letter Carriers, 1525 H St., NW. Approx. $1,000,000.

▲ N. Y., Ithaca—BUILDING—Cornell University, Ithaca, soon lets contract substructure for Anabel Taylor Hall, United Religious Works Bldg., on campus, $1,900,000 (entire bldg.). Starrett, Van Vleck & Marsh, 262 Fifth Ave., New York, Zone 16, archts. CD 5/2/46.

CONTRACTS AWARDED

▲ Calif., Los Angeles—HOSPITAL—Episcopal Diocese of Los Angeles, 1212 Shatto St., 10 story, 100 bed hospital of Good Samaritan, addn., remodeling, to Ford J. Twaits Co., 449 S. Beaudry St., T.S. Conste. Engineers, 600 St. Paul Ave., and Morrison-Knudsen Co., 411 W. 5 St., Approx. $3,000,000. Bids 7/17, awarded 7/18. CD 7/19.

▲ Calif., Walnut Creek—SHOPPING CENTER—Mar-Donald Products Co., 1 Montgomery St., San Francisco, shopping center on 18-acre site, S. Main St., Owner builds, $3,000,000. Byron Nishkian, 1045 Sansome St., San Francisco, engr. CD 5/2.

▲ D. C., Wash.—DORMITORY—Atonement Seminary, Harewood Rd. N.E., dormitory, 145 Taylor St. N.E., to Tuckman-Barbee Constr. Co., Inc., 1720 H St. N.W., Approx. $3,821,000. Bids 7/18, CD 7/6.

D. C., Wash.—CHURCH—Bethany Baptist Church, Rhode Island Ave. and 2 St. N.W., 2 story, brick, limestone church and Sunday school to Victor N. Judson, Inc., 8644 Adelaide Rd., Silver Spring, Md., $350,000. Awarded 7/14. McGlinn & Ferrara, 1830 Jefferson Pl., N.W., archts.

▲ Ill., Chicago—APARTMENT—Jeremiah S. Jones, c/o Shaw, Metz & Dolio, archts., 208 N. La Salle St., Zone 4, 21 story, 268 unit concrete skeleton apartment, incl. 150 car garage, 6030 Sheridan Rd., to Carl E. Erickson Co., 4057 N. Ravenswood St., Zone 40, $2,600,000. Bids 5/8. CD 4/28.

▲ Ill., Chicago—APARTMENTS—La Salle National Bank, 135 S. La Salle St., Zone 2, to H. S. Greenwald, 332 S. Michigan St., Zone 4, 59 unit apartment, Trust No. 8146-06, 1600 Hyde Park Blvd.

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▲ Minn., St. Paul—HOSPITAL—C. T. Miller Hospital, 12N College St., general contract superstructure 6 story, 52x183 ft., hospital addn., to Hagstrom Constr. Co., 1567 Selby Ave. Total est. $1,500,000. Bids 6/30. CD 6/14.

▲ Mo., Kansas City—HOTEL—Treanor Hotel Co., oper., of Hotel Muehlebach, c/o Barney L. Allis, pres. and gen. mgr., general contract 11 story, basmt., addn. to Hotel Muehlebach on 80x138 ft. site, exter. west or south side of 12 St., to Swenson Constr. Co., 5105 Terrace, Zone 2. Est. $2,000,000. CD 6/7.

▲ N. Y., Bayside—HOUSING—Wolcoff Bros., 143-02 75 Ave., Flushing, 452 two family attached houses, site purchased by 213 St., Jamaica Blvd. and 73 Ave. Owner builds. $7,500,000. CD 5/26.

▲ N. Y., Forest Hills—APARTMENT—Boulevard Estates, c/o Irving Pinkhauer & Pruzan, 183 Pearl St., Brooklyn, Zone 1, two 6 story apartments, yellow stone Blvd.—Jrnl 64 Ave. Owner builds. $1,775,000. CD 6/9.

▲ N. Y., Garden City—HOUSES—Sal Jack Homes, c/o Alwin Cassens, Jr., archt., 216-55 Queens Blvd., Forest Hills, 98 houses, Amherst and Adams Sts. Owner builds. $1,000,000.

▲ N. Y., Great Neck—SHOPPING CENTER—Samuel Gutenman & Assoc., c/o Samuel Paul, archt., 163-18 Jamaica Ave., Jamaica, shopping center, Northern Blvd. and Cutter Mill Rd. Owner builds. $1,000,000.

▲ N. Y., Hollis—APARTMENT—Seminole Apartments, c/o Julius Fishkind, archt., 161-19 Jamaica Ave., Jamaica, 2 apartments, 191 St., north of Woodhull Ave. and Woodhull Ave. and 191 St. Owner builds. $2,890,000. CD 5/26.

▲ N. Y., Merrick—HOUSES—Joseph Mascoli, c/o Materni & York, archts., 90-04 161 St., Jamaica, 96 houses in Merrick Woods sect. Owner builds. $1,500,000.

▲ N. Y., New Rochelle—HOUSES—Harkart Constr. Co., c/o Materni & York, archts., 90-04 161 St., Jamaica, 64 houses, Quaker Ridge Rd. and Pinebrook Blvd. Owner builds. $1,000,000.

▲ N. Y., New York—DORMITORY—Fordham University, Fordham Rd. and Webster Ave., Zone 58, dormitory to George F. Driscoll Co., 51 E. 42 St., Zone 17. Approx. $1,000,000. CD 5/31.

▲ N. Y., Pelham Manor—APARTMENT—Gro-Marc Constr. Corp., c/o S. J. Kessler & Sons, 118 E. 28 St., New York, Zone 16, 7 story apartment on 2 acre site, Boston Post Rd. Owner builds. $1,300,000.

▲ N. Y., Westbury—HOUSES—Stanley Becker & George Hofstatter, c/o Alwin Cassens, Jr., archt., 216-55 Queens Blvd., Forest Hills, 265 houses to be called Westwood Terrace on 55 acre tract bounded by Asbury and Rushmore Aves., Rushmore Public School and Cherry Lane. Owner builds. $3,500,000.

▲ N. C., Cullowhee—SCIENCE CLASSROOM—Western Carolina Teachers College, Cullowhee, science classroom and library to A. Lee Combs Co., 209 W. 4 St., Charlotte. $1,146,450. CD 6/29 under LB.

▲ N. C., Greensboro—HOSPITAL—Moses H. Cone Memorial Hospital, F. M. Vanstory exec. dir., Greensboro, general contract hospital to J. A. Jones Constr. Co., 204 W. 4 St., Charlotte. $2,356,000—plumbing, heating, air-conditioning, ventilating to C. H. Sullivan Co., Greensboro, $849,635—electrical work to Miller Electric Co., Columbia, S. C. $285,030. Grand total $3,490,635. Bids 6/27. CD 6/20, under LB.

▲ O., Akron—HOMES—Hyle Realty Co., c/o Walter L. Hyle, 240 N. Revere Rd., 300 homes, streets and sewers, on Sidney Twp. in Revere Rd. area. Owner builds. $1,500,000.

▲ O., Columbus—HOUSING—Virginia Lee Gardens, Inc., Jacob Friedman, pres., Jacob G. Bruns, archt., c/o engineer, 64 buildings containing 202 living units on 16½ acre tract within extens. of Ridgewood Ave., Virginia Ave. and Brookleigh Rd. Owner builds. $2,500,000. Jennings-Lawrence Co., 12 N. St., Columbus, engr.

▲ Okla., Tulsa—HOSPITAL—Hillcrest Memorial Hospital, 1601 S. 12 St., vertical to Memorial Hospital addn., to Tulsa Rig & Reel Co., Petroleum Bldg., $1,560,000. Est. $1,840,000. Bids 6/30, awarded soon. CD 6/1.

▲ Vt., Burlington—HOSPITAL—Mary Fletcher Hospital, Burlington, hospital addn. to vermilya-Brown Co., Inc., 205 E. 42 St., New York, N. Y., $1,724,000. Bids 6/27. CD 7/14, under LB.

▲ Wash., Longview—HOUSES—Blakeslee Housing Co., Longview, 150 frame houses, day labor. $1,250,000. CD 12/1/48.

INDUSTRIAL BUILDINGS

BIDS ASKED

▲ Tex., Baytown—PLANT—Bids Asked. J. M. Huber Corp., Bunger carbon black plant. $1,500,000. CD 7/18.

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▲ Ind., Jeffersonville—WAREHOUSE, etc.—Colgate, Palmolive Peet Co., 105 Hudson St., Jersey City,

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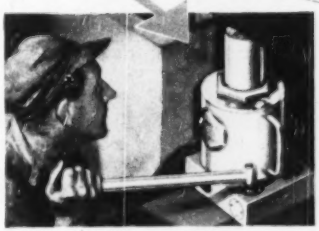

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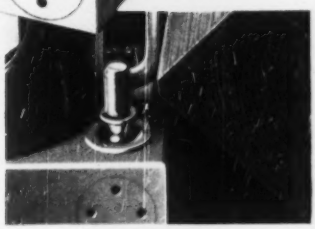

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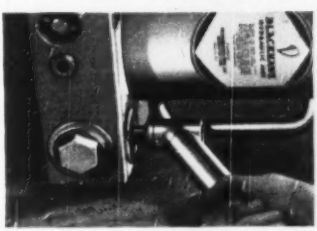

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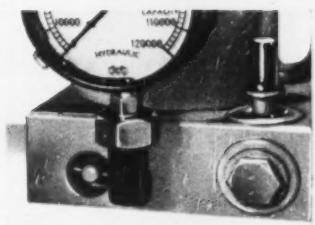

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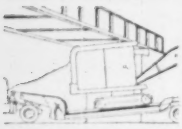
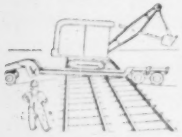


← STOOPS TO CLEAR LOW OVERHEAD OBSTRUCTIONS



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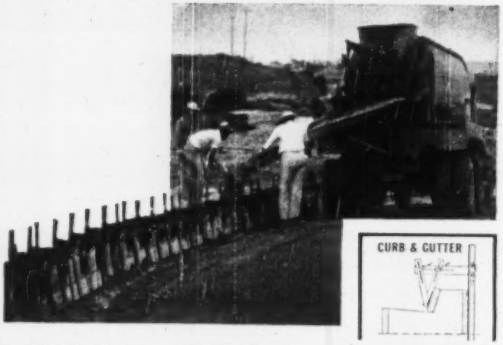

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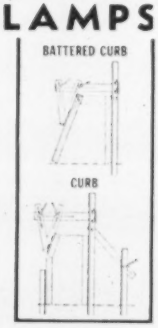

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N. J., soon lets contract warehouse and mfg. plant $2,100,000. Albert Kahn Associated Architects & Engineers, Inc., 345 New Center Bldg., Detroit, Mich., archt. and engr.

CONTRACTS AWARDED

▲S. C., Williamston—MILL—Williamston Print Cloth Mill, Williamston, mill addn., to Daniel Constr. Co., 429 N. Main St., Greenville. Approx. $1,000,000.

▲ Wash., Edmonds—REFINERY—Union Oil Co. of California, 617 W. 7 St., Los Angeles, Calif., asphalt refinery, to Bechtel Corp., 220 Montgomery St., San Francisco, Calif., Est. $1,000,000.

UNCLASSIFIED

BIDS ASKED

N. Y., St. George—PLUMBING FACILITIES—B.A. 7/31—Comr. Marine & Aviation, Pier A, North River, foot of Battery Pl., New York, Zone 4, plumbing facilities for viaduct and main terminal bldg., Sect. 2, reconstructing terminal and approaches at St. George Ferry Terminal, Contr. 2717 R. Plans deposit $5. CD 5/21/45.

Maryland—RURAL DISTRIBUTION LINES—B.A. 8/1—Southern Maryland Electric Co-operative, Hughesville, 26.42 mi. rural distr. lines, 66 kv. single wood pole transmission line, one metering station, Charles and St. Marys Counties. Plans deposit $25, refundable. B. O. Vannort Engineers, Inc., 700 S. College St., Charlotte, N. C., engr. CD 11/26/48.

N. Y., St. George—HEATING and VENTILATING—B.A. 8/1—Comr. Marine & Aviation, Pier A, North River, foot of Battery Pl., New York, Zone 4, heating and ventilating facilities for viaduct and main terminal bldg., Sect. 2, reconstruction terminal and approaches at St. George Ferry Terminal, Contr. 2718 R. Plans deposit $5. CD 5/21/45.

Fla., Miami—PIERS—B.A. 8/2—City, c/o Director Engineering 3318 Dinner Key Dr., Piers 4, 6 and 8 and catwalks at Dinner Key Marina.

† Nebraska—STRUCTURAL STEEL—B.A. 8/2—Bureau Reclamation, Dist. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo., structural steel, incl. beams, diaphragms and bearings for the underpass mile 309.19, reconstruction of Chicago, Burlington & Quincy R. R. Trenton Dam, Missouri River Basin Proj., Frenchman-Cambridge. Spec. 3129. CD 5/25/44.

New York—LIGHTING, etc.—B.A. 8/2—At office Henry A. Cohen, dir. Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, lighting and signs 0.62 mi. Cross Bronx Expressway, Contr. 12A, Contr. No. FA CBES0-2, Bronx Co. $80,000. Plans deposit $10.

Va., Blacksburg—TUNNELS—B.A. 8/2—At office S. K. Cassell, bus. mgr. V.P.I., Blacksburg, pipe tunnels and distr. mains from boiler plant to M. E. Laboratory and Lower Triangle at Virginia Polytechnic Institute, $220,000. Plans deposit $25. Wiley & Wilson, 905 Peoples Bank Bldg., Lynchburg, archts.

N. Y., Brooklyn—PARK—B.A. 8/3—Comr. Parks, at office Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., New York, Zone 21, park in S. Parkes Cadman plaza, between Fulton and Washington Sts., from Tillary to Midlagh Sts., etc., Contr. No. B-113-249. Plans deposit $20.

N. Y., New York—GENERATOR—B.A. 8/4—Bd. Transportation, 250 Hudson St., Zone 13, furnishing, installing 40,000 kw. turbo-generator for 74 Street power plant, New York City Transit Sys.

† Oregon—SPUR TRACK, etc.—B.A. 8/4—Bonneville Power Admin., 827 N. E. Oregon St., Portland, spur track, transfer track and drainage Sys. for Gorge sub-station, Lane Co., Inv. 52e3. Plans deposit $15.

Wyoming—RURAL DISTRIBUTION LINES—B.A. 8/7—Tri-County Electrical Assn., Sundance, Sect. II, contr. 321 mi. 7.2/12.5 kv. distr. lines, Campbell, Crook and Weston Counties, $375,000. H. S. Nixon Eng. Co., W. O. W. Bldg., Omaha, Neb., engr. CD 11/11.

† Wyoming—SWITCHYARD—B.A. 8/8—Bureau Reclamation, Dpt. Interior, Casper, Alcova Switchyard Transmission Proj., 30 mi. southeast of Casper, Mont. Alcova River Proj., Spec. 3232.

Wyoming—RURAL DISTRIBUTION LINES—B.A. 8/8—Tri-County Electrical Assn., Sundance, Sect. 17, contr. 321 mi. 14.4/24.9 kv. distr. lines, Campbell Co., $375,000. H. S. Nixon Eng. Co., W. O. W. Bldg., Omaha, Neb., engr. CD 11/11.

California—TRAFFIC SIGNAL SYSTEMS—B.A. 8/9—State Div. Hys., P. Wks. Bldg., Sacramento, traffic signal sys. on State Rte. 4 between Manteca and Riverbank Rds., G. T. McCoy, Sacramento, state hy. engr.

Ind., Hammond—SWIMMING POOLS, etc.—Bids Asked—Cities of Whiting and Hammond, City Hall, Hammond, 2 swimming pools, 2 bath houses, 4 shelter structures on lake front, $700,000. Leo Besozzi, 5217 Hohman St., engr. CD 4/14/49.

CONTRACTS AWARDED

▲ New Jersey—GAS PIPE LINE—South Jersey Gas Co., 2601 Atlantic Ave., Atlantic City, 77 mi. gas pipe line to carry about 30,000,000 cu. ft. natural gas daily, connect up near Camden with lateral of Transcontinental Gas Pipe Line Company's Texas to New York City Line (now under construction and will extend to Atlantic City with laterals to Glassboro, Bridgeton, Vineland and Estelville areas), to G. G. Speidel, Constr. Co., 2275 N. E. 36 St., Fort Worth, Texas. Approx. $2,175,000. CD 11/11.

Proposal Advertisements see pp. 73 to 75

OFFICIAL PROPOSALS

Bids: (885)

New Jersey Turnpike Authority

Sealed proposals will be received by the New Jersey Turnpike Authority for the following contracts:

CONTRACT NO. 44

The work to be performed under this Contract involves the construction of the superstructures for nineteen bridges and for one viaduct to be placed upon abutments and piers which will be constructed under Contract Nos. 21, 22 and 29, and other incidental work in connection with the construction of the New Jersey Turnpike between Relocated Rayway Avenue and Relocated Humboldt Avenue, in the City of Elizabeth, Union County.

Principal Items of Work Include:

Structural Carbon Steel, 18,000,000 Lbs.; Castings, 59,000 Lbs.; Reinforcement Steel, 2,800,000 Lbs.; Class B Concrete in Deck Slabs, Curbs, Malls, Sidewalks, Safety Walks, Parapets and Backwalls of Abutments, 12,650 Cu. Yds.; Metal Railings, 34,000 Lin. Ft.; Expansion Joints, 9,950 Sq. Ft.; *Suspended Storm Drains (Various Sizes)*, 5,800 Lin. Ft.

Contract documents may be seen, and may be inspected by prospective bidders during office hours, after July 17, 1950 at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton, New Jersey, and at the office of the Engineers, Ammann & Whitney, 185 Raymond Boulevard, Newark, New Jersey, or 76 Ninth Avenue, New York 11, New York.

Contract documents will be furnished for $5.00 for each set, upon application to the Authority. The payment will not be refunded and contract documents are not required to be returned.

Sets of Reference Drawings for Contracts Nos. 21, 22 and 29 will be furnished for $5.00 for each set upon application to the Authority, 65 Prospect Street, Trenton, N.J. The payment will not be refunded and the reference drawings are not required to be returned.

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CONTRACT NO. 50

The work to be done under this Contract involves the construction of the substructure and superstructure of the New York, Susquehanna & Western Railroad and New York Central Railroad overpass and other incidental work, all in connection with the construction of the New Jersey Turnpike, in the Borough of Ridgefield, Bergen County, New Jersey.

Principal Items of work include:

Open Foundation Excavation, 4,000 Cu. Yds.; Sand Backfill Under Footings, 1,100 Cu. Yds.; Porous Fill, 500 Cu. Yds.; Concrete, 6,400 Cu. Yds.; Reinforcement Steel, 1,300,000 Lbs.; Steel Piles, 160,000 Lin. Ft. or Cast-in-Place Concrete Piles, 121,000 Lin. Ft.; Structural Steel, 6,000,000 Lbs.; Low Alloy Steel Drainage Troughs, 160,000 Lbs.; Metal Railing, 3,117 Lin. Ft.

Contract documents may be seen, and may be inspected by prospective bidders during office hours, after July 14, 1950 at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey and at the office of the Consulting Engineers, Howard Needles, Tammen & Bergendoff, 55 Liberty Street, New York, New York.

Contract documents will be furnished for $5.00 for each set, upon application to the Authority. The payment will not be refunded and contract documents are not required to be returned.

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CONTRACT NO. 57

The work to be done under this Contract involves the construction of 4 steel and reinforced concrete bridges and 2 reinforced concrete multiple arch culvert type bridges, together with incidental grading, drainage and paving in connection with the construction of the New Jersey Turnpike, Section 3 between Moorestown and Mount Laurel in Burlington and Mercer Counties, New Jersey.

Principal tems of work for Contract No. 57 include:

Roadway Excavation, Earth, 141,600 Cu. Yds.; Borrow Excavation, 16,100 Cu. Yds.; Open Foundation Excavation (Wet and Dry), 16,500 Cu. Yds.; 4" Topsoiling, 21,950 Sq. Yds.; Cast-in-Place Concrete Piles, 15,600 L.F.; Concrete, various Items, 16,500 Cu. Yds.; Reinforcement Steel, 1,574,800 Lbs.; Structural Steel, 2,980,500 Lbs.; Storm Drain, various types and sizes, 680 L.F.; Macadam Base Course, 5" 2,650 Sq. Yds.; Modified Penetration Macadam Intermediate Course, 2,650 Sq. Yds.; Bituminous Concrete Surface Course, Type I, Mixed, Type FA BC-1, 2,650 Sq. Yds.; 6" Gravel Surface Course, 4,750 Sq. Yds.; Bituminous Surface Treatment, 2,680, Sq. Yds.

Contract documents may be seen, and may be inspected by prospective bidders during office hours, after July 17, 1950 at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton, New Jersey, and at the office of the Engineers, Parsons, Brinckerhoff, Hall & Macdonald, 51 Broadway, New York 6, New York.

Contract documents will be furnished for $5.00 for each set, upon application to the Authority. The payment will not be refunded and contract documents are not required to be returned.

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Proposals will be received at the office of the New Jersey Turnpike Authority, 65 Prospect Street, Trenton 8, New Jersey, until 10:30 o'clock D.S.T. in the morning, and thereafter in the Veterans Room of the War Memorial Building, Memorial Drive at Willow Street, Trenton, New Jersey, until 11:00 A.M. D.S.T., at which latter place they will be publicly opened and read, on the following dates: contracts numbered 44 and 50 on August 1, and contract number 57 on July 28.

The receipt and opening of proposal is subject to proper prequalification of the bidder in accordance with the regulations adopted by the New Jersey Turnpike Authority. Bidders must also submit with their proposal a revised financial statement and a statement of plan and equipment.

Proposals must be made upon the standard proposal forms in the manner designated in the Standard Specifications for Construction of the New Jersey Turnpike, and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and the number of the contract on the outside, and must be accompanied by a certified check drawn to the order of the New Jersey Turnpike Authority and a proposal bond, each for not less than five (5) per cent of the amount of the proposal, but not less than $500.00 nor more than $200,000.00 and must be delivered at the place designated above or before the hour named. Copies of the proposal form to be used for submitting proposals, of the forms for the proposal bond, of the form to be used for the financial statement and for the plan and equipment statement to be submitted with the proposal and of the special addressed envelope are furnished in detached form with the contract documents.

Contracts numbered 44 and 57 will be awarded or proposals rejected within fifteen (15) days, and contract number 50 within thirty (30) days from the date of opening proposals. The right is reserved to reject any and all proposals.

NEW JERSEY TURNPIKE AUTHORITY
PAUL L. TROAST,
Chairman

Bids: August 8, 1950 (881)

Construction of Bridge

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN That sealed bids will be received by the State Highway Commissioner for

SWINEFIELD BRIDGE

Construction of Swinefield Bridge across the Passaic River in the Borough of Roseland, Essex County, and in the Township of East Hanover, Morris County, Federal Aid Secondary Project No. SBO(1); Length 0.16 miles.

Estimated:
2,113 cu. yds. Channel Excavation
1,553 cu. yds. Foundation Excavation
396 lin. ft. Concrete Balustrade
14,115 sq. ft. Pneumatically Applied Mortar
1,562 cu. yds. Concrete in Structures
54,620 lbs. Reinforcing Steel
492,800 lbs. Structural Steel

Bids for the above will be received at the office of the State Highway Department, Room 162, State House Annex, Trenton, N. J. on Tuesday, August 8, 1950, at ten o'clock (10:00) A.M. EASTERN STANDARD TIME, eleven o'clock (11:00) A.M. DAYLIGHT SAVING TIME, and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the statute and the rules and regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a Federal Aid Secondary Project authorized by the provisions of Title 23 of the Revised Statutes of New Jersey and supplements, and by Sections 2, 3 and 4, P. L. 521, 78th Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, 600 Bloomfield Avenue, Bloomfield, N. J., or New Jersey State Employment Service, 30 Speedwell Avenue, Morristown, N. J. The attention of bidders is directed to the special provisions covering subletting of assigning the contract. The minimum wage paid to all unskilled labor employed on this contract shall be $.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on this contract shall be $1.50 per hour.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J. and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 162, State House Annex, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the place specified, on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

(Signed) R. J. ABBOTT,
State Highway Commissioner.

Bids: August 7, 1950 (887)

Alterations to Fire Alarm System

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
CONTRACT NYA-134

Sealed proposals for making alterations to the fire alarm system at New York International Airport will be received in the office of the Chief Engineer of The Port of New York Authority, Room 1411, 111 8th Ave., New York 11, N.Y. until 2:00 P.M. Monday, Aug. 7, 1950 and thereafter in the Auditorium of the Authority at the same address until 2:30 P.M. on the same date, at which latter time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $25 per set. The deposit will be remitted if the documents are returned in good condition, not later than 20 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, July 27, 1950.

(Continued on page 74)

Read the Official
Proposal Columns of
ENGINEERING NEWS-RECORD
This Week and Every Week

U. S. Government
(Continued from page 73)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specification No. 31281) will be received by Bureau of Reclamation, Great Falls, Montana, August 15, 1950, and then publicly opened for furnishing labor and materials and performing all work for the construction of Tiber Dam and dike. The work is situated about 13 miles south of Tiber, Montana. Principal items are approximately 16,000,000 cu. yds. excavation, 11,500,000 cu. yds. embankment, 44,000 cu. yds. concrete, and other work. Time allowed for completion will be 1,200 days. For particulars, address Bureau of Reclamation, Chester, Montana; or Building I-A, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner.
(8856)

OFFICIAL PROPOSALS

Bids: August 10, 1950 (8878)

Fabrication and Installation of Steel Shelving

THE PORT OF NEW YORK AUTHORITY
CONTRACT BT-52

Sealed proposals for the fabrication and erection of steel shelving in Baggage Room in the Port Authority Bus Terminal, 625 8th Ave., New York, will be received at the office of the Director of Purchase of The Port Authority, Room 1402, 111-8th Ave., N. Y. 11, until 11 A.M. Thursday, Aug. 10, 1950, at which time and place proposals will be opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase.

THE PORT OF NEW YORK AUTHORITY
HOWARD S. CULLMAN, Chairman
New York, July 27, 1950

Bids: August 2, 1950 (8841)

Addition to Water Works System

NOTICE TO CONTRACTORS
VILLAGE OF COLONIE, NEW YORK

Sealed bids for the construction of additions to the water works system of the Village of Colonie, New York, consisting of about 4.8 miles of pipe, house services, hydrants, valves and appurtenances, will be received at the Village Office, Stop 29, Albany-Schenectady Road, Colonie, New York, until 6:00 o'clock, P. M., Eastern Daylight Saving Time, August 2, 1950 and then at said Village Office, publicly opened and read aloud.

The Information for Bidders, Form of Contract, Plans, Specifications and Form of Performance Bond may be examined at the Village Office, Stop 29, Albany-Schenectady Road, Colonie, New York, and at the office of Keis & Holroyd, Consulting Engineers, 255 Broadway, Troy, New York. Copies thereof may be obtained at the office of Keis & Holroyd upon payment of $25.00 for each set. Each bidder who submits such set in good condition, will be refunded his payment and any non-bidder upon returning such set within 30 days shall be refunded $20.00.

The Board of Trustees, Colonie, New York, reserves the right to waive any informalities in, or to reject any or all bids.

A certified check made payable to the Order of the Board of Trustees, Colonie, New York, in the amount of five per centum (5%) of the bid must be deposited by each bidder with his bid as a guarantee that in case the contract is awarded to him, that he will within 5 days thereafter, execute such contract and furnish a satisfactory bond. Any bidder who fails to do so shall forfeit the deposit as liquidated damages, and acceptance of the bid will be contingent upon the fulfillment of this requirement by the Bidder.

The successful Bidder will be required to furnish a performance bond satisfactory to the Board of Trustees of the Village of Colonie, New York, in the amount of the contract and having as surety thereon, such surety company or companies as are acceptable to the Board of Trustees of the Village of Colonie, New York.

The work may be let in the contract or separate contracts may be let for furnishing pipe and special valves, hydrants, meters and services material.

No bidder may withdraw his bid within 30 days after the date set for the opening thereof. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof.

PERCY L. REYNOLDS, Village Clerk
Dated, July 13, 1950
Keis & Holroyd
Consulting Engineers

OFFICIAL PROPOSALS

Bids: July 26, 1950 (8721)

State Road Work

NOTICE TO CONTRACTORS. STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is ten-thirty o'clock A.M., eastern standard time on Wednesday, July 26, 1950 by Henry A. Cohen, Director, Bureau of Contracts & Accounts 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City. The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of the set in good condition within 20 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 2				
Fulton	RC 50-34	L. Ketcham, Dist. Engr., 100 No. Genesee St., Utica, N. Y. — Mayfield-Village, S. H. 5194 — Mayfield-Northville, Pr. 1, S. H. 363	1.00	Asp. Conc. Ty. 1A, Opt.	$7,000 Plans $10	$122,000
		DISTRICT No. 10				
Kings	BQE 50-3	J. J. Daly, Dist. Engr., Montauk Hy. at Little E. Neck Rd., Babylon, L. I., N. Y. — Brooklyn-Queens Expressway, Cont. 143	1.60	Directional Signs	$1,500 Plans $10	$35,000
Queens	VWI 50-4	Van Wyck Expressway, Cont. 16	3.40	Directional Signs	$2,400 Plans $10	$40,000
Suffolk	RC 50-35	Amityville Village, Broadway, S. H. 1633 — Amityville Village, S. H. 5369	0.68 — 0.48 Mi. Misc. Work — 0.20 Mi.	Asp. Conc. Type 1A Opt.	$7,000 Plans $10	$132,000

Proposals for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

The right is reserved to reject any or all bids.

R. D. TALLAMY,
Supt. of Public Works

Bids: September 19, 1950 (8771)

Construction of Sewage Collection and Treatment Works

C-321

CITY OF SAGINAW, MICHIGAN
BIDS: SEPTEMBER 19, 1950.

Sealed proposals will be received by the City of Saginaw, Michigan, in the office of Mr. Roy A. Benway, Purchasing Officer, Rm. 104, City Hall, Saginaw, Michigan, up to 2:00 p.m. E.S.T. September 19, 1950, for the construction of the following Sewage Collection System, Treatment Plant, and appurtenant works:

DIVISION A—COLLECTING AND INTERCEPTING SEWERS

SECTION NO. I
12,596 ft.—72" tunnel sewer
1—Miscellaneous manholes, etc.
SECTION NO. II
4,990 ft.—48" tunnel sewer
1887 ft.—54" tunnel sewer
3,651 ft.—36" tunnel sewer
2,982 ft.—7' tunnel sewer
1,462 ft.—66" open cut sewer
24—Miscellaneous manholes, etc.
SECTION NO. III
20 ft.—48" tunnel sewer
1,050 ft.—42" land section river crossing
544 ft.—42" subaqueous section river crossing
6,180 ft.—36" tunnel sewer
865 ft.—30" open cut sewer
91 ft.—26" open cut sewer
1,762 ft.—72" open cut sewer
60 ft.—72" outlet
31—Miscellaneous manholes, etc.
SECTION NO. IV
148 ft.—66" tunnel sewer
2,220 ft.—54" tunnel sewer
882 ft.—48" tunnel sewer
19—Miscellaneous manholes, etc.
SECTION NO. V
137—Regulator and backwater chambers
SECTION NO. VI
18—Regulator and backwater chambers
DIVISION B—STORM WATER AND FLOOD PUMPING STATIONS
SECTION NO. I—Webber St. Flood Pumping Station.
SECTION NO. II—Weiss St. Flood Pumping Station.
SECTION NO. III—Fourteenth St. Pumping Station.
SECTION NO. IV—Hancock St. Flood Pumping Station.
SECTION NO. V—Emerson St. Flood Pumping Station.
SECTION NO. VI—Storm Water Pumping Units.
DIVISION C—SEWAGE AND GARBAGE TREATMENT PLANT

DIVISION D—SLUDGE AND GARBAGE INCINERATOR

The Proposal, Contract Form, Plans and Specifications under which the work will be done are on file and may be examined at the office of the Purchasing Officer, Room 104, City Hall, Saginaw, Michigan, or at the office of the Consulting Engineers, Hubbell, Roth & Clark, Inc., 2640 Buhl Building, Detroit 26, Michigan. Copies of each division of the work may be obtained from the Purchasing Officer or the Consulting Engineers by making a deposit of twenty-five dollars ($25.00) for each set of plans and contract documents, which deposit will be refunded upon the return of plans and contract documents in good condition within thirty (30) days after the closing of bids.

A certified check or bidder's bond for a sum not less than five per cent (5%) of the proposal, will be required with each proposal.

All bids will be publicly opened and read.

All proposals shall be based on completion of all work by March 31, 1952.

The City of Saginaw reserves the right to reject any or all proposals and to waive any informality in bidding, and to accept any proposal for any section of each division of the work. No proposal may be withdrawn for a period of thirty (30) days after the scheduled closing time for acceptance of the proposals.

The successful bidder will be required to furnish satisfactory performance, labor, and material bonds.

ROY A. BENWAY,
Purchasing Officer
July 11, 1950.

Bids: August 10, 1950 (8879)

Fabrication and Installation of Steel Desks for Ticket Booths

THE PORT OF NEW YORK AUTHORITY
CONTRACT BT-53

Sealed proposals for the fabrication and erection of steel desks for ticket booths in the Port Authority Bus Terminal, 625 8th Ave., New York, will be received at the office of the Director of Purchase of The Port Authority, Room 1402, 111-8th Ave., N. Y. 11, until 11 A.M. Thursday, Aug. 10, 1950, at which time and place proposals will be opened and read.

Contract documents may be obtained upon request at the office of the Director of Purchase.

THE PORT OF NEW YORK AUTHORITY
HOWARD S. CULLMAN, Chairman
New York, July 27, 1950.

(Continued on page 75)

U. S. Government
(Continued from page 74)

General Services Administration, Public Buildings Service, Washington, D. C. July 18, 1950.—Sealed bids in duplicate for installing one new boiler and related equipment in Power House Howard University at Washington, D. C., will be received until 1 P.M., Standard Time, on August 16, 1950, in Room No. 7330, General Services Building, Washington, D. C., and then publicly opened in Room No. 7015. Bid guarantee is required. If the amount of the contract exceeds $2000, U. S. Standard Form No. 23, Construction Contract, will be used and performance and payment bonds will be required. Upon request one set of Prebid Documents and two sets of drawings and specifications will be supplied without charge to each general contractor interested in bidding on the complete project, of which none be returned. Not more than six additional sets of drawings and specifications may be obtained by general contractors at a charge of $5.00 per set, which will be refunded for each set returned in good condition within 15 days after the bids are opened. Checks offered as payment must be made payable to the order of the Treasurer of the United Sta. Upon request and in the discretion of the undersigned one set of drawings and specifications will be furnished to builders' exchanges, chambers of commerce and other similar organizations, with the understanding that the set will be retained on their premises and made available for inspection by any interested contractor or material firm. Bidding material may be obtained at Room No. 1304 General Services Building, 19th and F Streets, N. W., Washington 25, D. C., Phone EXecutive 4900, Extension 2257. W. E. Reynolds, Commissioner of Public Buildings Service, General Services Administration. (880)

Bids: August 8, 1950 (886)

Construction of Road

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commissioner for

TILTON ROAD

Construction of Tilton Road from 0.5 mile southeast of English Creek-Port Republic Road to State Highway Route 43, in Egg Harbor, Hamilton and Galloway Townships, Atlantic County, Federal Aid Secondary Project No. 89-3-1. Length 3.56 miles.

Estimated:
- 2,268 cu. yds. Roadway Excavation
- 9,291 cu. yds. Embankment Road Gravel (Borrow)
- 43,615 sq. yds. Scarifying, etc.
- 60,577 sq. yds. Preparation of Subgrade
- 6,863 tons Bituminous Concrete, FA-BC-1
- 2,921 lin. ft. Concrete Curb.

Bids for the above will be received at the office of the State Highway Department, Room 102, State House Annex, Trenton, N. J. on Tuesday, August 8, 1950, at ten o'clock (10:00 A.M.-EASTERN STANDARD TIME), eleven o'clock (11:00 A.M. DAYLIGHT SAVING TIMED), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

NOTE: The proposed project is a "Federal Aid Secondary Project" authorized by the provisions of Title 23 of the Revised Statutes of New Jersey, as supplemented by Sections 2, 3 and 4, P.L. 1921, 78th Congress, and is to be performed in accordance with the special provisions and requirements of the Bureau of Public Roads, Department of Commerce, as outlined in the specifications, which provisions require that labor be employed from lists furnished by the State Employment Service, 1445 Bacharach Boulevard, Atlantic City, N. J. The attention of bidders is directed to the special provisions covering subletting or assigning the contract. The minimum wage paid to all unskilled labor employed on this contract shall be $.75 per hour. The minimum wage paid to all intermediate grade of labor employed on this contract shall be $1.00 per hour. The minimum wage paid to all skilled labor employed on the contract shall be $1.50 per hour.

OFFICIAL PROPOSALS

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, N. J., and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 102, State House Annex, Trenton, N. J. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

(Signed) R. J. ABBOTT,
State Highway Commissioner.

Bids: August 15, 1950 (884)

Sealed proposals will be received by the Youngstown Borough Municipal Authority, at the Borough Building, Borough of Youngstown, Westmoreland County, Pennsylvania, until xxx o'clock P.M. (Eastern Daylight Saving Time) on Tuesday, August 15, 1950, at which time and place the bids will be publicly opened and read aloud, for the Construction of Water Distribution System, Transmission Main and Appurtenances.

Copies of the Plans, Specifications and other Contract Documents can be obtained from Richard J. Harman, Consulting Engineer, 222 North Third Street, Harrisburg, Pennsylvania, upon a deposit of $25.00 for each set of documents. If the documents are returned in good condition within five (5) days after the opening of the bids, one-half amount ($12.50) of the deposit for one set will be refunded. If the documents are not returned within the time stated, the entire amount of the deposit will be forfeited. A certified check in the amount of 5% of the base bid must be submitted with the proposal as bid security. No bid may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

The Youngstown Borough Municipal Authority of the Borough of Youngstown reserves the right to waive any informalities in or reject any or all bids.

Richard E. McKee, Secretary
Youngstown Borough Municipal Authority
Borough of Youngstown, Pennsylvania.

Bids: August 22, 1950 (882)

Centrifugal Pumping Units

GOVERNMENT OF PUERTO RICO
PUERTO RICO AQUEDUCT AND SEWER AUTHORITY

Sealed bids will be received by the Puerto Rico Aqueduct and Sewer Authority until 3 o'clock P.M. August 22, 1950 at the office of the Authority in Santurce, Puerto Rico, (mailing address Executive Director, Puerto Rico Aqueduct and Sewer Authority, Post Office Box 5127, San Juan 12, Puerto Rico) for Section 1 of the Rio Grande de Loiza Development.

The work includes furnishing, testing, delivering F.A.S. Port of Embarkation and guaranteeing four synchronous motor driven centrifugal pumping units, two of 7,000 gallons per minute capacity at 160 feet total head and two of 10,500 gallons per minute capacity at 170 feet total head, and providing the services of a competent engineer or superintendent for such periods as are ordered by the Authority to assist in erecting and testing the equipment.

Copies of the plans and specifications may be examined and obtained at the office of the Authority named at the offices of Buck, Seifert and Jost, Consulting Engineers, 117 East 19th Street, New York 3, N. Y. and Industria Algodonera Building, Santurce, Puerto Rico (mailing address Post Office Box 8861, Fernandez Juncos Station, Santurce, Puerto Rico), upon deposit of Twenty Dollars, which will be refunded upon return of the plans and specifications in good condition within 20 days after the date on which bids are received.

Bids will be received only from persons or firms who have requested plans and specifications under their own names. These documents cannot be obtained later than August 17th, 1950.

Each proposal must be accompanied by a certified check or bid bond from a surety company authorized to do business in Puerto Rico and satisfactory to the Authority in amount equal to ten per cent of the proposal.

The Authority reserves the right to consider bids for thirty days after their receipt, to waive any informalities, to accept any bid or to reject any or all of them.

PUERTO RICO AQUEDUCT AND SEWER AUTHORITY
By SERGIO CUEVAS,
Executive Director

Bids: August 4, 1950 (888)

Water Meter For Federal Building

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
CONTRACT NYA-132

Sealed proposals for furnishing and installing a water meter for the Federal Building at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave. New York 11, N. Y. until 11:00 A.M., Friday, Aug. 4, 1950, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $10 per set. The deposit will be remitted if the documents are returned in good condition, not later than 20 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, July 27, 1950.

Bids: August 14, 1950 (889)

Rehabilitation of Ladder Track

THE PORT OF NEW YORK AUTHORITY
PORT NEWARK
CONTRACT PN-34

Sealed proposals for the rehabilitation of the ladder track at Port Newark will be received in the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, N. Y., until 2:00 P.M., Monday, Aug. 14, 1950 and thereafter in the Auditorium of the Authority at the same address until 2:30 P.M. on the same date, at which latter time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $25 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, July 27, 1950.

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ARCHITECTURAL DESIGNER

Overseas assignment with an American oil company in South America. Must have degree and over five years' experience design and preparation of complete architectural drawings for new construction and alterations of small offices, industrial buildings, and residences. Must prepare isometrical and perspective drawings for presentation of architectural projects. This is a regular staff job, offering retirement plan and other benefits. Write giving age, education, marital status, and detailed experience resume.

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Radio City Station
New York 19, New York

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Experienced ENGINEER, familiar with Oil Refinery design and capable of estimating process equipment from flow diagrams.

Give full information, experience record and salary expected.

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P-7108, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

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wanted for work in Brazil Age 28 to 40. By North American Company which has been building hydro-electric projects in Brazil for past 50 years. First class engineering and construction organization with good opportunities for future. Salary to suit qualifications. In reply state experience and personal status in detail. Reply to

Dept. WHK
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Yonge & Gerrard Sts.
Toronto, Ontario, Canada

WANTED:

Structural and Plate Steel Designer

Must have wide experience in both fields. Permanent position with moderate size plant in the Southwest. Write

P-7189, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

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SW-7276, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

REPLIES: Box No's. Address to office nearest you
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CHICAGO 520 N. Michigan Ave. (11)
SAN FRANCISCO 68 Post St. (4)

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CONSTRUCTION COMPANY, operating nationwide, specializing in structural concrete, such as bridge piers and tall buildings, and mass concrete such as dams, require A No. 1 thoroughly experienced estimator familiar with present-day costs capable of preparing comprehensive and complete estimates. To be considered, complete information must be furnished. Our organization has been advised of this advertisement. P-6974, Engineering News-Record.

INSPECTORS OR Engineering Aids for field and laboratory, experienced in field control of asphalt concrete and soils. State age, qualifications and salary desired. Toledo Testing Laboratory, 1819 North 12th St., Toledo 2, Ohio.

ESTIMATOR, THIS is a good opportunity for you if you are experienced in general takeoff and pricing of commercial, industrial and public buildings. Must have held responsible position with successful lumpsum contractors. We operate nation-wide. To be considered, complete details must be furnished in first letter. Salary open. Our organization knows of this advertisement. P-7155, Engineering News-Record.

DESIGNING ENGINEER experienced in steel and concrete bridges and structures. Must be capable of assuming responsibility. Salary and bonus. Submit complete data on education and experience. P-7101, Engineering News-Record.

WANTED: EXPERIENCED Structural Designers reinforced concrete and steel. Seelye, Stevens & Valne, 101 Park Avenue, New York, N.Y.

SUPERINTENDENT FOR large contract placing concrete deck on long and high bridge. Must be experienced and capable. Give age, experience and past record of performance with references which will be investigated. Write P-7149, Engineering News-Record.

WATER WORKS Engineer. Graduate Civil Engineer with about ten years experience in water works design and construction. Good opportunity for qualified man in permanent connection with large water supplying utility. Located in Pennsylvania. Send complete resume, experience, age, references, salary expected, when available and enclose recent photograph. Reply to P-7222, Engineering News-Record.

WANTED, SEVERAL engineering graduates, under 35, by large industrial fire prevention engineering and underwriting organization; inspections and special consulting service. Electrical and chemical engineers preferred. Permanent. P-7230, Engineering News-Record.

ESTIMATOR WANTED by established firm of commercial and industrial contractors located Lehigh Valley, Pennsylvania. Must be thoroughly experienced in quantity takeoff, pricing secondary. State age, experience and salary desired. P-7237, Engineering News-Record.

FIELD OFFICE CHIEF CLERK

Able to supervise payrolls, routine job buying, material and bill checking etc. on very large heavy construction — not building — jobs throughout Middle West. Must have at least 5-10 years' identical experience with leading contractors. Average job duration upwards of two years. Permanent position. Top salary. State age, education, experience, present salary and references who will not be contacted without your consent.

P-7151, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

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WANTED ESTABLISHED Georgia General Contractor with hire-rate top flight building superintendents within next three weeks. They should be desirous of permanent connection, thoroughly experienced and cost conscious. Write or wire at once past positions, references, salary expected and availability to 1812 Pendleton Road, Augusta, Georgia.

ACCOUNTANT, MALE or Female, who has had experience in Electrical Utility accounting for light and power. State qualifications and salary expected. Harley D. Carpenter, Box 447, Meadville, Pa.

ASPHALT FOREMAN — Experienced; free to travel, familiar with Barber-Greene Paver. Contact Allegheny Asphalt & Paving Company, Inc., Pittsburgh, Pa. Hemlock 1-7740.

ENGINEERS, EXPERIENCED in design of water and sewer systems, water and sewage treatment plants, industrial and commercial buildings, to prepare plans or supervise construction. State experience, salary required and give references. Answer P-7277, Engineering News-Record.

EXPANDING CONSTRUCTION and engineering company located in Northwestern Ohio specializing in the construction of sewage disposal and water works plants has attractive open job for assistant to general contractor. Must have office and field experience with mechanical and heavy construction, and be capable of estimating and expediting projects. Unlimited opportunities for advancement. State salary desired and references. P-7275, Engineering News-Record.

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POSITIONS WANTED

BOOKKEEPER - FEMALE experience with Construction Co. full charge, good typist, experienced general ledger, payroll, age 27, $55.00 per week. PW-7226, Engineering News-Record.

GENERAL FOREMAN shaft tunnel quarry, dam, sewer, close, open. General excavation rock. Available immediately. PW-7265, Engineering News-Record.

CIVIL ENGINEER, registered P.E. N.Y. Thirty years executive experience on general construction, highways, airports, municipal improvements, sewers, building. Speaks foreign assignments. Fluent Spanish. Retired (ret) from U. S. Engineers. Would consider position as Resident Engineer or Foreign contact Representative. Location immaterial. Reasonable availability. Excellent health. Presently located New York City. PW-6824, Engineering News-Record.

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(Continued on the opposite page)

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POSITIONS WANTED
(Continued from opposite page)

PROJECT ENGINEER: Civil, Mechanical, Electrical background. Age 35. Design, construction, supervision, estimating. Registered. Top qualifications. PW-7216, Engineering News-Record.

CIVIL ENGINEER — age 32, available now. 14 yrs. engr. experience incl. design, plan review and admin. Currently employed in field as contractors representative. PW-7196, Engineering News-Record.

GENERAL SUPERINTENDENT. 20 years' to five years' experience. Thoroughly experienced in design of buildings. Varied commercial, industrial and heavy construction. Graduate Engineer. Address PW-7145, Engineering News-Record.

PIPE SUPT. Approx. 20 yrs. experience on oil Refinery and Powerhouse construction. Foreign and Domestic. 47 yrs. of age. Knowledge of Spanish. Have Passport and good references. Responsible available immediately. P. O. Box 58, Vidor, Texas.

CIVIL AND Industrial Engineer, 31. Master's degree, P.E., diversified experience, desires position with contractor or builder to do estimating, planning, etc., or with materials manufacturer on product research, management, materials, production or quality control. PW-7226, Engineering News-Record.

ESTIMATOR, cap. take-off, commercial, industrial, residential buildings, new and alterations. Seeks position. Age 38. PW-7225, Engineering News-Record.

GRADUATE CIVIL Engineer with Law Degree and 6 years varied experience in sales in engineering related field or industry with chance for advancement. Now studying accounting by correspondence. Presently located in South Florida. PW-7218, Engineering News-Record.

OFFICE MANAGER. Accountant-Auditor-16 years diversified experience in heavy refinery and heavy construction. All phases of accounting and cost accounting, payroll and timekeeping. Locate anywhere. PW-7214, Engineering News-Record.

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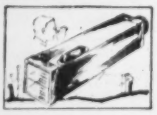

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FS-7251, Engineering News-Record
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FS-7284, Engineering News-Record
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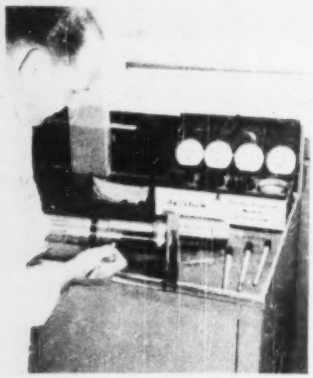

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(Continued on page 87)

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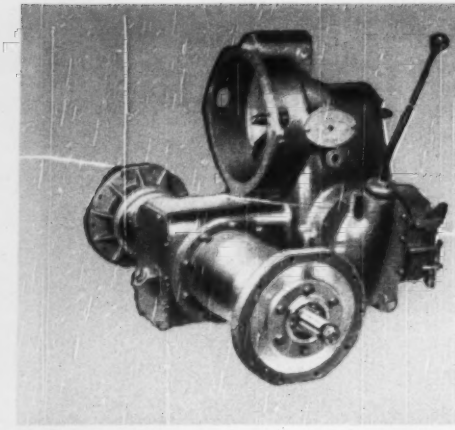

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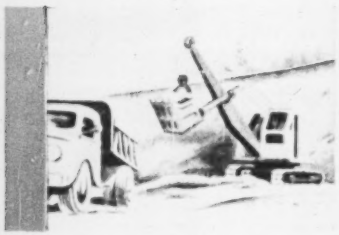

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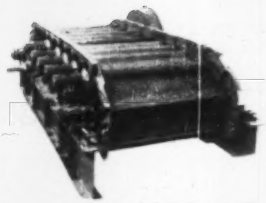

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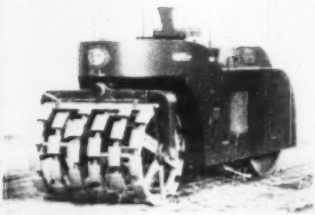

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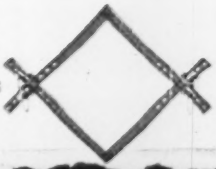

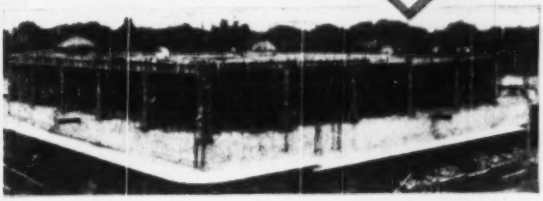

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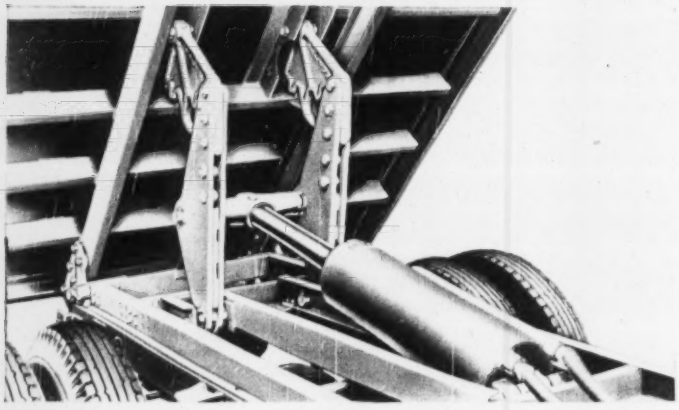

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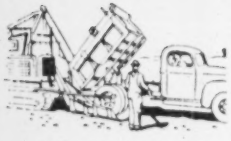

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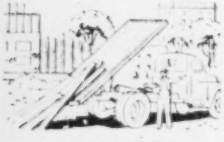

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New Product Briefs

Hardfacing alloy (Arcolite 59) is designed primarily for applications involving high stress abrasion with medium impact. It is composed principally of chromium, molybdenum, carbon, and iron. Available from: Air Reduction Sales Co., New York 17, N. Y.

Air cooler automatically adjusts evaporation rate with temperature change. The De-Hu-Matic control is said to cool without dampness in any kind of weather. Maker: United States Air Conditioning Corp., Minneapolis, Minn.

Bleeder screw assortment includes sizes and types for all hydraulic brake wheel cylinders. Available from: Wagner Electric Corp., St. Louis 4, Mo.

Moisture meter determines wetness of wood and plaster at the touch of a button. Scale is calibrated from 7% to 30% moisture. Manufactured by: Taglabue Div., Weston Electrical Instrument Corp., Newark 5, N. J.

New Skyscraper in Times Square District

Known as "1407 Broadway," this new 42-story office-and-showroom building is the first skyscraper to be built in New York's Times Square District in 19 years.

The structure occupies the entire blockfront on Broadway, between 38th and 39th Streets, and also fronts on 7th Avenue. It is especially planned and designed to serve the women's apparel and textile industries. It is completely air-conditioned, has 1,000,000 sq ft of rentable space, and facilities for unloading as many as nine trailer trucks at one time. The ground floor is occupied by stores, and for the convenience of employees and passersby, a block-long arcade extends through the building from Broadway to 7th Avenue.

The exterior of 1407 Broadway is virtually a series of picture windows, separated between stories by a facing of sea-green brick. The steel framework, weighing close to 10,000 tons, was fabricated and erected by Bethlehem.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation.

Owner: 1407 Broadway Realty Corp., New York. *Architects:* Kahn & Jacobs, New York. *Structural Engineer:* Charles Mayer, C. E., New York. *Contractor:* J. H. Taylor Construction Co., Inc., New York.

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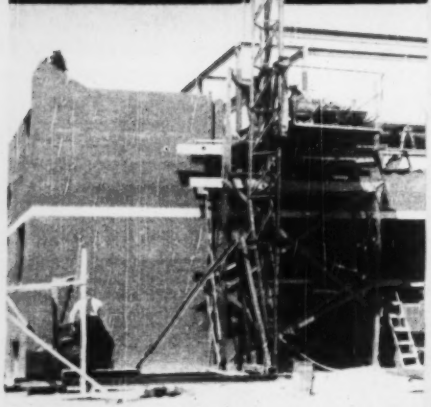

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When you investigate the many money saving, *profit making* features of Clyde Portable Builders Towers you will know that material handling costs come down and profits rise just as soon as a Clyde is put in operation on your construction work.

SIMPLE, EASY TO ERECT OR DISMANTLE

Tower is transported by truck or towed on trailer wheels which attach to tower base.

Assemble tower *on the ground*, thus eliminating accident hazards.

Tower is raised with its own hoist. No cranes or gin poles are needed.

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Manufacturers' Publications

Self-Contained Wagon Drill—"Drive Your Light Wagon Drill and Compressor" is the title of Bulletin T-16 describing the 105 Tractair Mobildrill. It shows this combination tractor-compressor and light wagon drill in action, and gives complete specifications and dimension data.—LE ROI CO., 1706 S. 68TH ST., MILWAUKEE 14, WIS.

Portable Washing Plants—How to attain higher capacities with greater mobility in aggregate washing operations is theme of Bulletin 1650. This 8-p bulletin gives complete information, with schematic flow diagrams, of Lippmann's new Washmore and Super Capacity portable washing plants. Information includes capacity and dimensional tables.—LIPPMANN ENGINEERING WORKS, 4603 W. MITCHELL ST., MILWAUKEE 14, WIS.

Folding Gooseneck Trailer—Three sizes of trailers (20, 27, and 32 tons) are described in this 4-p bulletin. Featured in the folder is a description of the one-man-operated folding gooseneck which eliminates the need for ramps in loading the trailer. Also pictured is the lower platform height which provides better clearance for passing viaducts, high wires, and tunnels and bridges.—MARTIN MACHINE CO., KEWANEE, ILL.

Metric Conversion Tables—Conversions listed on this table are: Feet to meters, meters to feet, and inches into decimals of a foot. The inches-to-decimal scale reads from 0 to 11⅞ in.; the feet-to-meter scale to 99 ft; the meters-to-feet scale to 99 meters. Other miscellanous conversion factors are also listed.—ROBERT S. MAYO, LANCASTER, PA.

Stud Welding—Eleven different construction applications of stud welding are illustrated in a new 4-p folder. Uses shown include installation of roofing, siding, windows, and decorative panels; insulation; electrical equipment; and various types of reinforcing for concrete and gunite applications.—NELSON STUD WELDING DIVISION, MORTON GREGORY CORP., LORAIN, OHIO.

Electrical Raceways—Steel underfloor electrical raceway system is described in Catalog 600. This system is designed for either new construction or

(Continued on page 94)

DRAVO HEATERS

*Compared with conventional steam system cost.

Half a million is important money in anybody's language—and it gets more important when it's SAVED instead of spent.

That's just what happened when a leading automobile manufacturer recently built a mammoth new body plant, with over 600,000 sq. ft. of floor space, and with ceiling heights ranging up to 52-feet. Heat requirements, including fresh air tempering provisions, totalled 54,250,000 Btu. Lowest quoted price for a conventional steam boiler plant was $860,000. ACTUAL cost of a complete Dravo *Counterflo* Heater installation of 53 units was $330,000. These direct-fired warm-air heaters take care of all open-space heating requirements of the manufacturing area of the plant.

Bear in mind that these savings involved no compromise with heating effectiveness. The top-flight engineers responsible for selection knew how vital *comfort* is in keeping employes contented and promoting top output. They looked *first* for the finest in heating results . . . and *second* for economies. They found both profitably combined in Dravo Heaters.

Neither did this saving come from "cutting corners" in building the heater, but rather through the basic simplicity of method and equipment. Each of the oil-fired space heaters manufactures heat "on demand" to blanket its own assigned area with warmth. It also introduces fresh, tempered air into the building as needed. Modulating burner controls permit continuous operation and continuous air circulation. This minimizes temperature fluctuation, assures maximum comfort in all weathers, and conserves fuel—for when any section needs LESS heat, its unit burns LESS fuel. Units all have the Underwriters' Laboratories label. They can be converted from oil to gas, should the fuel situation make this desirable.

This spectacular saving has been duplicated on a lesser scale in thousands of smaller plants. If you are concerned with heating any new or old building, you owe it to yourself to find out how Dravo *Counterflo* Heaters are serving and saving for others . . . and how they can save both system costs and operating costs for YOU. Look in the yellow section of your phone book—or write us direct at Dravo Building, Pittsburgh 22, Pa., for Bulletin FH-523-6

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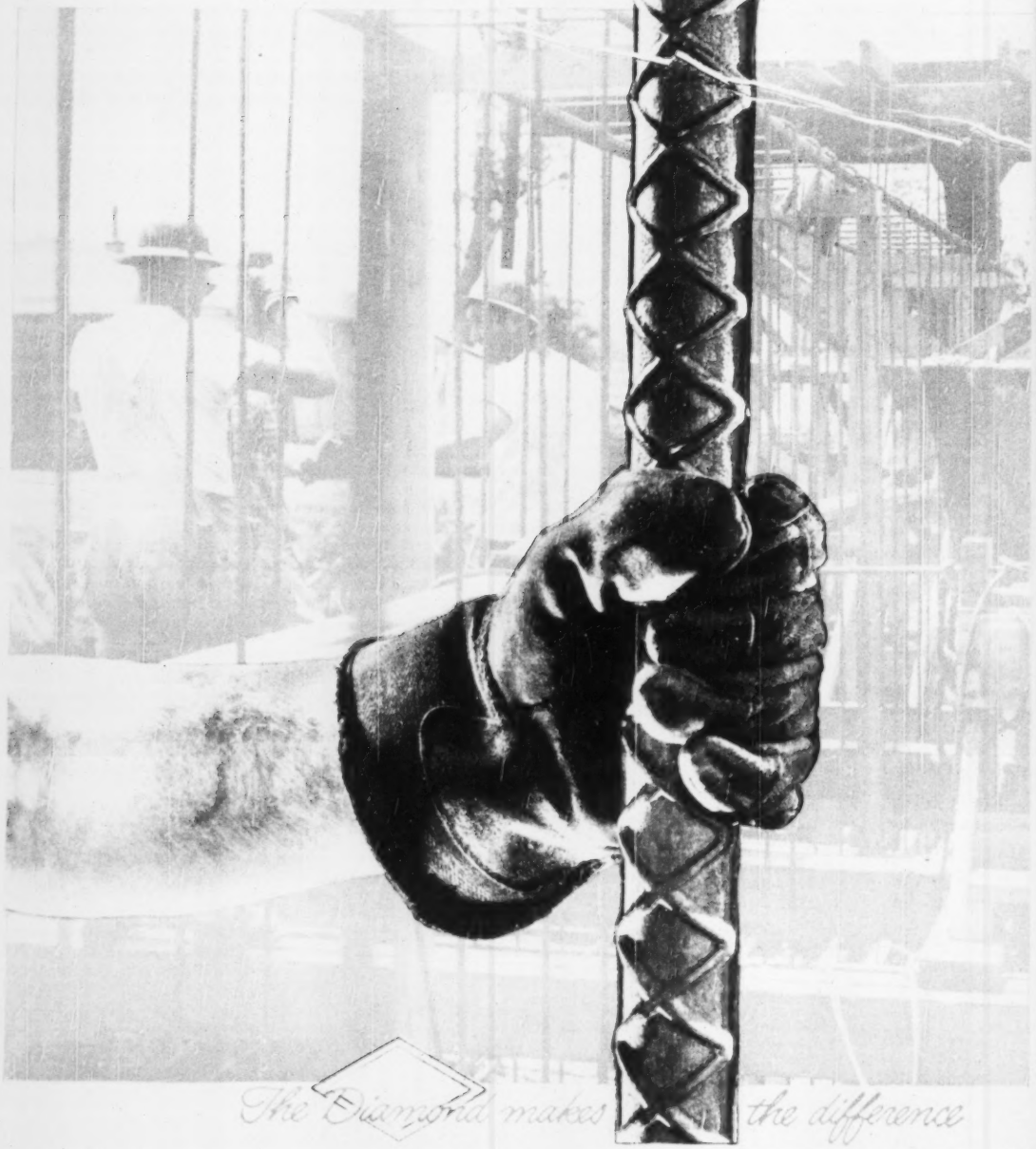

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By taking advantage of the extra bond strength provided by U·S·S Di-Lok, you can minimize bending and other fabricating operations. And, in some cases, steel and concrete requirements can be reduced.

In addition to providing greater bond strength, the closely-spaced, diamond-pattern ribs also make for easier handling. U·S·S Di-Lok bars lie freely atop and beside one another. Do not interlock when bundled or stacked in racks. Thus, individual bars can be withdrawn freely.

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Made only from new-billet steel, U·S·S Di-Lok concrete reinforcing bars are available in standard sizes. Produced in six strategically located plants around the country: Pittsburgh, Pa.; Youngstown, Ohio; Gary, Ind.; Birmingham, Ala.; Pittsburg, Cal. and Torrance, Cal. Stocks are carried by leading fabricators in most principal cities.

To make your *next* job a *better* job, specify U·S·S Di-Lok. It is *the* reinforcing bar for building stronger, more durable concrete structures—and doing the job economically. Call us for the name of your nearest distributor.

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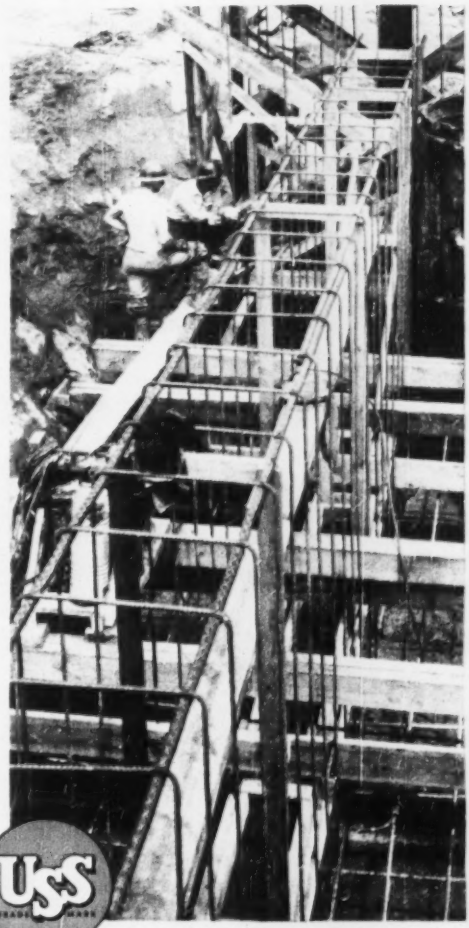

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modernization. The catalog provides a complete suggested specification for a floor electrical distribution system. A typical Nepcoduct floor plan layout is also shown. Roughing-in dimensions are provided, as are catalog numbers of all materials used in constructing a Nepcoduct system.—NATIONAL ELECTRIC PRODUCTS CORP., CHAMBER OF COMMERCE BLDG., PITTSBURGH 19, PA.

Automatic Control Valves—Catalog 50 (120 pp.) contains a listing of the complete Trojan line of automatic pressure-control valves and specialties. Data for each valve is provided by photographs, cutaway drawings, and tables. Features of each valve are described, and recommended applications are listed.—ROSS VALVE MFG. CO., INC., TROY, N. Y.

Feeder Bulletin—Traylor has issued a 20-p. bulletin describing a complete line of apron, grizzley, table, and slurry feeders. Cutaway views of each type of feeder show interior construction. Installation photos show Traylor feeders working with all types of crushers, rotary kilns, and grinding mills.—TRAYLOR ENGINEERING & MFG. CO., 149 MILL ST., ALLENTOWN, PA.

Hard-Facing Electrodes—Allows for rebuilding and hard-facing are listed in this 8-p. catalog. The catalog describes each material in detail, listing its properties, welding procedure for its use, typical applications, and sizes in which it is furnished.—ALLOY RODS CO., 7805 W. MARKET ST., YORK, PA.

Road-Building Equipment—Equipment listed in the Apsco catalog includes wideners, base pavers, trench rollers and widening chippers. Detailed specifications are provided for each unit in the Apsco line. Text and photographs are used to describe principal features of the equipment and to show how the equipment is used.—ALL PURPOSE SPREADER CO., ELYRIA, OHIO.

Side-Lift Traveloader—Hydraulically controlled side-loading Traveloader is designed to handle lengthy materials in narrow passageways. It can also be used as a yard crane, spooled-cable reeler, strip-steel carrier, and a side-loading fork-lift truck. A catalog (12 pp.) is now available containing complete information on its construction and operation. This catalog shows the Lull unit in use on a variety of jobs, shows a birdseye view indicating its overall appearance, and lists complete specifications.—LULL MFG. CO., 3612 E. 44TH ST., MINNEAPOLIS 6, MINN.

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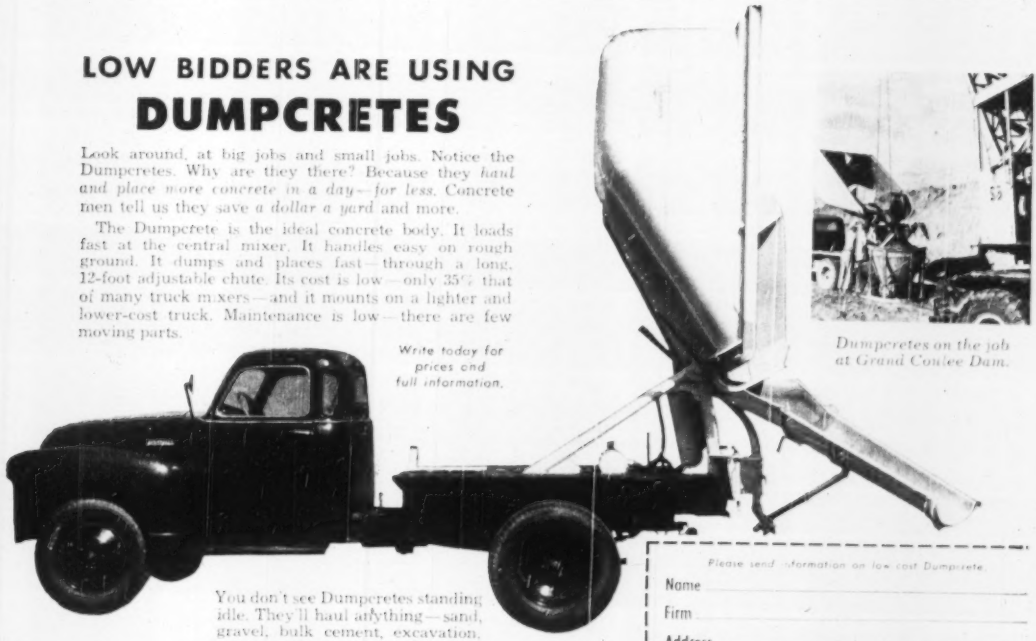

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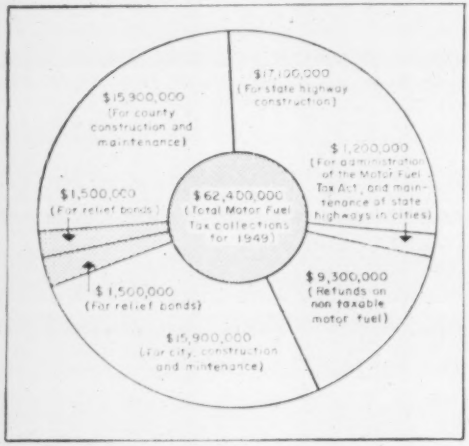
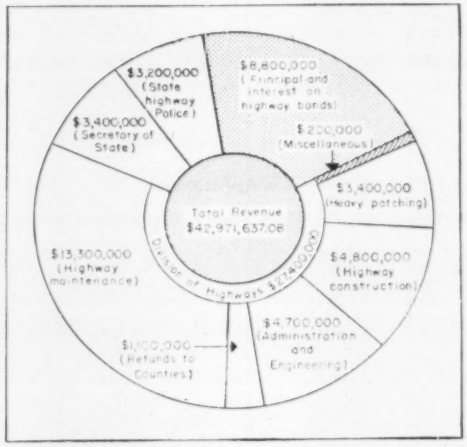




ILLINOIS HIGHWAY FUNDS: Where the money comes from and where it goes—Only one-third of the net motor fuel tax goes for state highway construction, (left) while the maintenance budget increases yearly. That's why there's a . . .

Crossroad for Illinois

Unless Illinois finds some way to increase its matching funds for federal aid highway construction—and finds it quickly—it can very well lose nearly $15,000,000 of federal funds. It might lose much more.

A two cent increase in the motor fuel tax might do the trick—if a larger portion were earmarked for the main highway system. But such an increase has little chance, according to local observers. (A proposal for such a tax hike failed in 1949—and it's no secret that it failed because proponents couldn't agree on how the money was to be divided between primary, urban and secondary highways.)

But should the state highway department's share of the tax go up (it now gets only one cent of a three-cent tax) that would bring in $35,000,000 a year more—and that might be enough to prevent loss of vital U. S. funds. And those funds can mean the difference between an obsolete, economically unsound highway system, and a good one that grows with need.

• **How did Illinois get there?**—It more or less drifted into its present dilemma.

In the 1920's, the state was one of the leaders in highway construction. In those years, it put down more than 1,000 miles of new concrete every year. But, with the passing years—and the lessening value of money in terms of highways—the responsibilities increased, while the revenue did not.

Today, for example, C. M. Hathaway, chief highway engineer, and his staff must build, rebuild or otherwise maintain more than 14,000 miles of the state's most important roads.

This is how money has to be spent in 1950: Maintenance—$16,750,000; Traffic Control—$1,500,000; City streets (maintenance)—$700,000.

And (see chart) only $17,000,000 out of the total of $62,400,000 motor fuel tax revenue received in 1949 was available for state highway construction; only $26,200,000 out of $43,000,000 in revenues from license fees was available. Revenues in 1950 from the two sources are estimated at about the same figures.

• **Can't get out**—So, with a good proportion of its revenues going to fixed expenses of this kind, this is the situation Illinois faces, with regard to federal aid funds:

The state's share of these funds (from the Federal Highway Act of 1948) total $40,900,000. Yet none of this money will be available for building roads during the biennium ending June 30, 1951—the state doesn't have enough money to match Uncle Sam. Paradoxically, the state is using what funds it has to match a federal appropriation made under the highway act of 1944.

All probably won't be lost. The 1948 federal aid funds do not lapse until June 30, 1953—and financial experts figure that by the end of the next biennium (ending June 30, 1953) state funds may total $26,000,000. So Illinois may reclaim all but the $14,900,000 of the federal funds—but it may lose the rest if added revenues aren't provided.

And that isn't all that's worrying highway engineers. Two other points are in their thoughts:

1. Some $70,000,000 worth of urgently needed road construction has had to be taken off the books for 1950-51 because of lack of funds. It must be held in abeyance until more money is in the till.

Even so, $16,500,000 of last year's total program of $56,700,000 ($34,200,000 awarded in 1949 and $22,500,000 carried over from 1948) was carried over to this year. The department expects to award $20,400,000 worth of construction this year. With its other commitments, this will bring the 1950 construction program up to $43,400,000. Of this, about $10,400,000 will have to be carried over to 1951.

2. If the Federal Aid Act of 1950 is passed by Congress, Illinois' share will be about $54,000,000 for 1951-52. Add this to the $40,900,000 from the earlier allocations and you get $94,900,000 of federal money that the state stands to lose in the next five years.

A recent study of the state's road needs showed that $171,000,000 of new highway construction is needed yearly for 10 years.

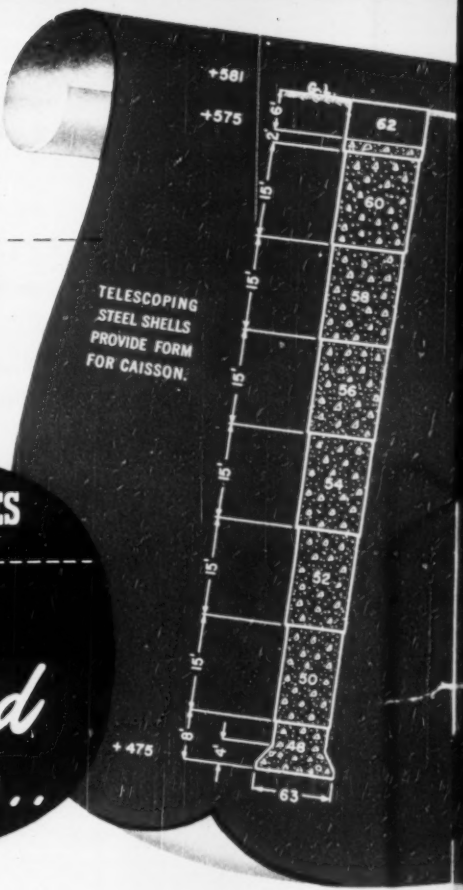
Raymond

MAKES 5 TYPES OF CONCRETE PILES

1. STANDARD . . . 2. STEP-TAPER . . . 3. PIPE STEP-TAPER
4. COMPOSITE . . . **5. GOW CAISSONS**

Raymond installs every type of pile: cast-in-place concrete, precast concrete, steel pipe, wood and H-beam. Raymond operations include underpinning, borings and soil investigations, waterfront construction and harbor and river improvements, also cement mortar lining of pipes by the Centriline Corporation, a Raymond Subsidiary.

At left, excavating starting pit and placing first cylinder. At center, excavating bell at bottom of the steel-lined shaft. At right, the completed caisson.



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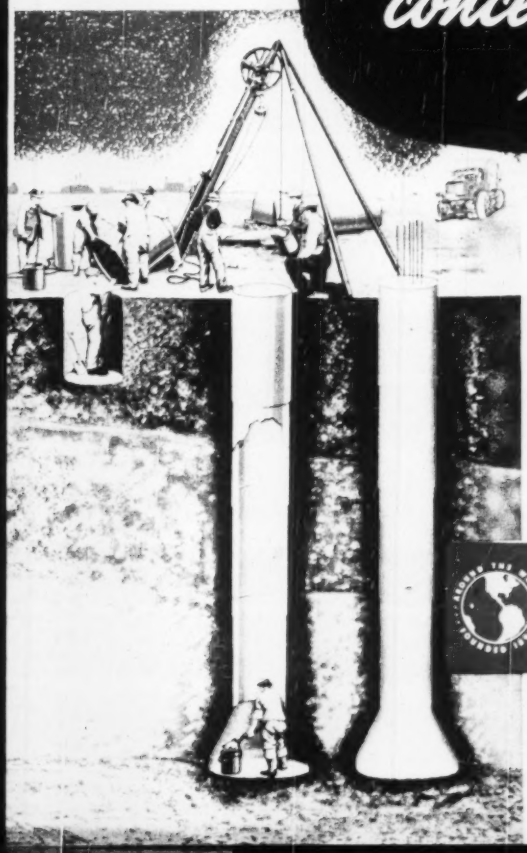

Raymond Gow caissons are efficient and economical for supporting heavy concentrated loads under certain soil conditions. The Gow method consists of hand or machine excavation carried on inside of telescoping steel cylinders. Where the caisson rests on hard ground, a bell is usually formed at the bottom to distribute the load over a large area. Where the caisson rests on rock, the bell is usually omitted. After excavation is completed, the steel cylinders are removed as the concrete is poured.

Because heavy equipment is not required and the steel cylinders are re-usable, Gow Caissons are economical in most soils. Your inquiry is cordially invited.

Raymond CONCRETE PILE CO.

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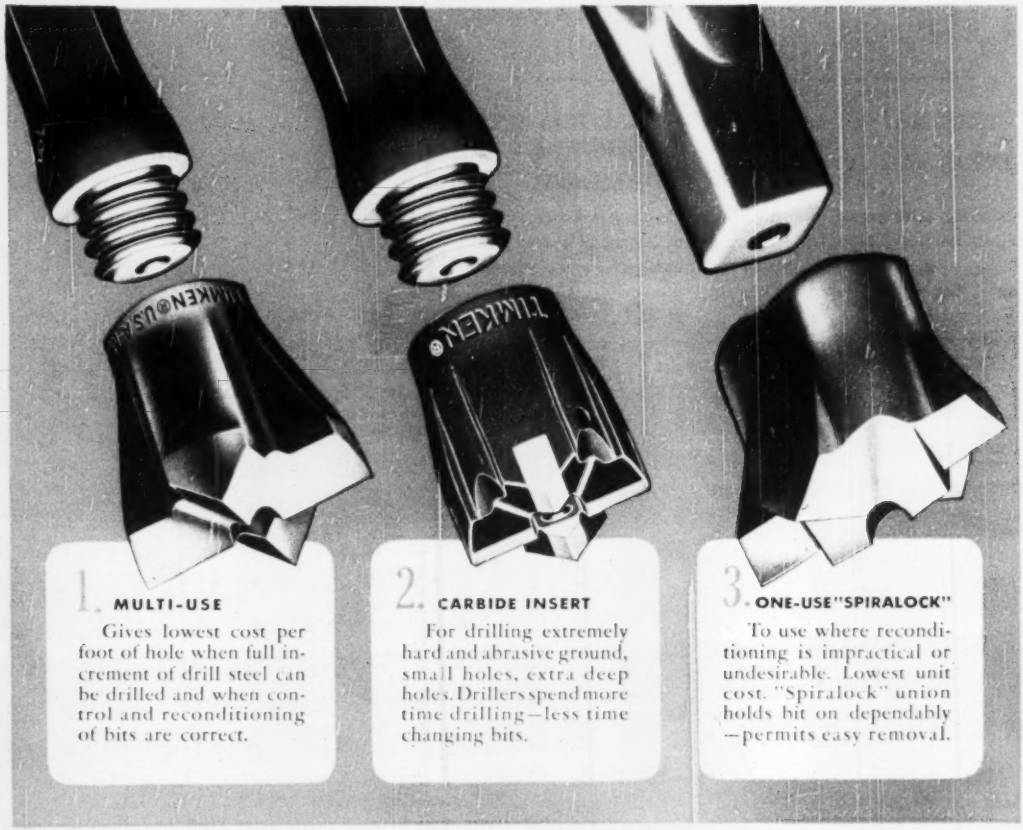
BRANCH OFFICES: Boston, Syracuse, Philadelphia, Baltimore, Washington, Pittsburgh, Atlanta, Miami, Houston, Kansas City, St. Louis, Cleveland, Chicago, Detroit, Salt Lake City, Portland, San Francisco, Oakland, Los Angeles and principal cities in Latin America.

Only TIMKEN® offers all 3 rock bit types


1. MULTI-USE
Gives lowest cost per foot of hole when full increment of drill steel can be drilled and when control and reconditioning of bits are correct.
2. CARBIDE INSERT
For drilling extremely hard and abrasive ground, small holes, extra deep holes. Drillers spend more time drilling—less time changing bits.
3. ONE-USE "SPIRALOCK"
To use where reconditioning is impractical or undesirable. Lowest unit cost. "Spiralock" union holds bit on dependably—permits easy removal.

and a complete Rock Bit Engineering Service!

WHICH type of rock bit is best for *your* job? Let the Timken Rock Bit Engineering Service help you decide.

Timken Rock Bit Engineers have had years of experience in mining, quarrying, and construction. And with *all three* rock bit types to draw upon, you're sure of getting the bit performance your job demands, whether it be lowest bit cost, lowest cost per foot of hole, greatest possible drilling speed, or any other desired advantage.

Whichever type of Timken bit you select, you are assured of top quality. Every Timken bit is made of Timken electric furnace steel, with uniform hardness for longer wear, better cutting.

Free Booklet! For detailed information on Timken removable rock bits, write on your company letterhead for this new Timken booklet. The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".

TIMKEN *your best bet for the best bit . . . for every job*